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WOOD'S MEDICAL AND SURGICAL MONOGRAPHS

CONTENTS

THE PEDIGREE OF DISEASE
BY JONATHAN HUTCHINSON, F.R.S.

COMMON DISEASES OF THE SKIN
BY ROBERT M. SIMON, M.D.

VARIETIES AND TREATMENT OF BRONCHITIS
BY DR. FERRAND.

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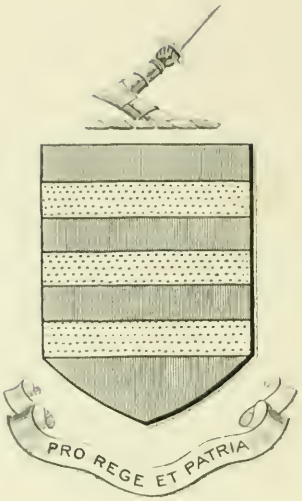

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THE

PEDIGREE OF DISEASE,

BEING

SIX LECTURES

ON

TEMPERAMENT, IDIOSYNCRASY AND DIATHESIS

DELIVERED IN THE THEATRE OF THE ROYAL COLLEGE OF SURGEONS IN THE SESSION OF 1881

BY

JONATHAN HUTCHINSON, F.R.S.

Late Professor of Surgery and Pathology in the College; Emeritus Professor of Surgery in the London Hospital; President of the Ophthalmological Society, etc., etc.

THE PEDIGREE OF DISEASE.

LECTURE I.

Mr. President and Gentlemen,—I fear I do not much mistake in the belief that the subjects which I have ventured to take for my present course of lectures are by no means high in professional favor. Our forefathers, who knew far less about the details of pathology than we do, attached far more importance to such matters as temperament and diathesis. They were accustomed to prescribe for a man's temperament; we think only of his disease, and turn aside with weariness from classifications of diathesis in which the physicians of an older day delighted. Although to a large extent this change of sentiment has been the result of advance in knowledge, yet I think it might easily be shown that it has gone too far, and that we now neglect unwisely the study of those differences between man and man of which, for the most part, physiology takes no cognizance, but which may yet prove of much importance in modifying the processes of disease. It is to this study that I now invite your attention. I have been attracted to it in part by its own intrinsic interest, and in part by the circumstance that it has seemed to be, in some sense, supplementary to the lectures which on former occasions I have had the honor to deliver from this chair. In my first course (three years ago) I investigated the present state of knowledge as to the influence of the nervous system in the production of disease. In the second we examined those remarkable and widely-spread forms of diathesis known respectively as Gout, Rheumatism, and Leprosy. When on these subjects I tried to show that rheumatism is a modification of the catarrhal diathesis, mainly nervous in its origin, in which the stress of the reflex disturbance falls upon the tissues of the joints. I traced a

close parallel between gout and leprosy, alleging that both are food-diatheses, being distinctly and definitely caused by certain peculiar articles of diet. Respecting both we had to remark upon the facts, that having been thus acquired by food, they became capable of transmission from parent to child, and that gout, at any rate, was prone to receive important modifications in such inheritance. In my third course, delivered last summer, I was led by a not unnatural sequence to take as my topic the laws of pathological inheritance in general, and to deal with them in relation to such maladies as syphilis, gout, leprosy, catarrh, and certain specialized defects, such as deaf-mutism, color-blindness, and hæmophilia. In each one of these courses I have been obliged very frequently to use the term "diathesis," and to justify its use against what I have all along recognized as a widespread and to some extent well-grounded distrust of the vagueness of the knowledge, or, shall I say, of the mere ignorance which its employment not unfrequently denotes. It has thus occurred to me that I could not take for the present course a subject more suitable than the one which I have announced. It will enable me to recapitulate, with amplification, some of the topics to which on former occasions I adverted briefly, to approach them from a different point of view, and, I trust, to place some of them in a clearer light. In doing this it will be my duty to avoid repetition, but if I should now and then seem to any of my audience who have honored me on former occasions to be attempting to enforce that concerning which I may be thought to have previously said enough, I must beg their indulgence. I must also offer some preliminary apology for the incompleteness and fragmentary character of my lectures. It will be impossible to pass even in the most cursory manner over the whole of the ground indicated, and I shall therefore prefer to dwell with some considerable detail upon certain portions of my subject with which I am personally familiar, and which also appear to have special value as illustrating general laws.

It is needful, in beginning, to define our terms, and in doing this I shall keep as closely as possible to customary usage. We may perhaps define the term *temperament* as applicable to the sum of the physical peculiarities of an individual, exclusive of all definite tendencies to disease. Different temperaments are to be assumed to be likely to give some degree of peculiar-

ity to morbid processes when such have been induced by other causes; but they do not in themselves involve any special proclivity. When most strongly marked, temperament is still consistent with the prolonged enjoyment of perfect health. If there be distinct proclivity, we must then use a stronger term, and speak of *diathesis;* and I would define a diathesis to be any bodily condition, however induced, in virtue of which the individual is, through a long period, or usually through the whole life, prone to suffer from some peculiar type of disease. Some diatheses are inherited, others are acquired. Of some, the effects are permanent or constant; of others, they are transitory, or recurrent after intervals of health. The term should, however, never be applied to any condition of health which is expected to pass away and leave no trace, for the idea of persistency, in some sense, is always implied. On the other hand, we do not confuse diathesis with dyscrasia, for while the latter definitely implies bad health, the former only denotes proclivity, and may be used when its subject seems perfectly well. Thus, to distinguish between temperament and diathesis, we may say that the former is a matter of physiology and the latter of disease, and that the former term is applicable only to peculiarities which are a part of the original organization of the individual, while the latter may be acquired as well as inherited. Thus, inherited diathesis is more often than not entirely latent at the time of birth, and is susceptible of aggravation, or, in some cases, of cure, in after-life. Such alternations are not possible in the constitutional peculiarities which we name as temperament.

Concerning the term *Idiosyncrasy,* I will not say more in the way of definition than that it is applicable to any definite peculiarity of organization of which the consequences may occur unexpectedly and otherwise inexplicably. It does not, like diathesis, imply any special proneness to disease, only that under certain well-known circumstances results which are peculiar to the individual will certainly occur. Although, as I shall have occasion to observe, it is quite possible that the idiosyncrasies may in many instances have sprung from the diatheses, yet they have become in long hereditary transmissions questions rather of organization than of disease. Their existence may, however, be revealed for the first time at any period of life, and nothing is more common than that an idio-

syncrasy should pass into absolute abeyance, to wait until, after it may be a very prolonged period, its proximate exciting cause may again make it conspicuous. Just as observers of mankind have from time to time strained their faculties in the endeavor to find in the external lineaments of a man some clue to his mental power and moral habits, so have physicians sought to find in parallel indications the means of predicting his tendencies in reference to disease. As yet I fear we must say that the labors of the physiognomist and those of the student of temperament have been alike disappointing. Whoever will set himself the task of attempting to classify a given number of individuals according to their temperaments will, I think, soon find himself baffled. He will discover that he is mistaking for criteria of temperament conditions which are simply indicative of youth or age, of health or disease, or the effects of past anxiety or trouble, or of comparative immunity from them. Just as the physiognomist ought carefully to exclude from his estimate of the original and inborn character of a man those traits of expression which have come to him through the wear and tear of life, and keep closely to the original features, so should the student of temperament scrupulously reject all that has been superadded, and which is in a sense accidental. Temperament, as I have endeavored to define it, concerns the original inherited organization of the individual, and does not include anything which is the result of the influences to which his life has exposed him. That which has accrued to him during life goes to produce or aggravate diathesis, but can do nothing in modification of temperament. Dr. Laycock has well spoken of the temperaments as being "fundamental modes of vital activity peculiar to individuals." To some such conception as this we must keep if we would use the word with any precision. Yet a very slight familiarity with the subject will easily show us how difficult it is so to restrict its use, and especially is this the case when dealing with adult and senile periods of life. The very names of the temperaments in many instances denote the record of the results of long-existing disease rather than of individual peculiarities as regards vital activity. Indeed, it may be questioned whether in a large majority of cases there do really exist in persons as yet in perfect health any peculiarities by which we can predicate or discriminate the "fundamental mode of vital activity."

Disease, when it occurs, will reveal it to us, and upon this point I shall have much to say in subsequent lectures. But I fear that so long as perfect health exists the data are exceedingly few and untrustworthy. When, for instance, we recognize a melancholic temperament, do we not usually take note of something which is the result of disease which has been experienced in the past, rather than of a peculiarity possessed by the individual while in health? The features which go to make up the sanguine temperament, are they not in part, and in large part, often those indicative of sound health in the digestive functions and blood-making organs, and such as might possibly be destroyed by a few years' illness? If we seek for something more fundamental, shall we not be obliged to confess that we have but little to guide us in a classification excepting the conditions which go to make up what we mean by complexion? In complexion we include the color of the hair and eyes, the state of the skin as regards thickness, thinness, or transparency, and the various degrees of freedom of distribution of blood in the capillaries of the face. It is easy to apply with tolerable accuracy such words as blonde, fair, dark, brunette, sallow, pale, florid, clear, muddy, and the like, and these and many others are epithets applicable to the complexion. Temperament, however, although to a large extent confessedly indicated by complexion, is generally held to include something more. If it did not I fear we should find it but a sorry basis upon which to build a knowledge of the vital peculiarities of the individual. Yet again, I ask, what have we to which we can make appeal? We may examine a man's features, note the size of his bones, the shape of his jaws, the brilliancy of his eye, the coarseness or fineness of his hair, his stature, his muscularity, his abundance or otherwise of cellular tissue and fat; but in observing all these things we shall be reminded that some of them are simply peculiarities of family, or of race, and have little or nothing to do with health, while others are conditions which may vary much at different periods during the same life. Above all, if I mistake not, we shall find it quite impossible to combine with well-known and indelible types of complexion any correlative peculiarities as regards the points which I have just enumerated. We shall find fair persons who have coarse skins, and others of the same tint of hair and eye who have transparent skins. We shall

find dark people who are florid, and others who are pale, and we shall have to note that the tendency to fatten varies very much at different periods of life, and that it often depends quite as much upon diet as upon temperament. I come then back to my point, and assert that whoever will set himself to classify by temperament a dozen healthy individuals whom he may chance to meet on a steamboat, in a law court, or at a dinner party, will find that he has scarcely any data excepting those of complexion. He will find, moreover, unless I am much mistaken, that if he attempts to go beyond mere complexion, there are not more than two or three in the dozen whom he can with any degree of confidence assign to special temperaments. As to complexion itself, the further he goes the more he will have to confess that, putting various conditions of sanguification aside as being in many persons dependent upon varying states of health, he can after all classify the complexions themselves only in reference to pigmentation. The varying degrees of dark, fair, or red constitute almost the sole individual peculiarities of the complexion which are not altered by disease or diet.

We come then to the question—Are congenital peculiarities as regards pigmentation in any degree trustworthy as indicative of vital peculiarities in the individual possessing them? We will ask the question first as regards individual races, and next as regards different individuals of the same race. That pigmentation as we now see it in the various races of man is an inherited quality and so definitely transmissible that it constitutes one of the bases of race distinction, may easily be admitted, while at the same time we must also grant that it is in itself a result of climate. Those who live in the tropics become dark, without question, as the result of the direct influence of the sun; while those who live in more temperate climates lose their pigment, or retain it only in certain special structures, as the hair, the irides, and the choroid. If apparent exceptions to this general law occur, they are to be met with probably as the consequences of human interference in modifying the conditions. Thus, the habit of wearing clothes prevents the development of any approach to blackness of skin in white races who may have lived through many generations in the tropics. The blackest skins always belong to those who have joined the two conditions of nakedness and a tropical sun. Thus, then, to begin at the beginning, may

we not believe that varying states of pigmentation of the integument denote rather exposure to climatic influences than peculiarities of development? Nor is there, so far as I know, much reason for believing that variations in this respect imply any material differences in health tendencies. Such peculiarities as we recognize in different races—the immunity of the negro from yellow fever, his liability to elephantiasis and to tetanus—may easily have nothing whatever to do with his pigmentation *per se*, and be matters simply of race. This view, I think, derives considerable support from the facts which I shall mention directly as regards the peculiarities of dark or fair complexions in members of the same race and among the lower animals.

If I have seemed to insist too much upon mere differences in complexion as being those to which almost all observers unconsciously trust in their endeavors to discriminate the temperaments in persons in good health, let me ask those who doubt it, to imagine themselves set to classify a group of negroes. It may be that the sameness in negroes is not nearly so great as it may appear to us, who are accustomed to deal with persons of very various types of complexion, and that those who have lived among them might be able to effect some sort of classification. We know that in a flock of sheep, which, to the untrained observer, all seem exactly alike, the shepherd can usually find distinctive individual differences. Admitting this, I still doubt, however, whether it would be practicable to apply to a race, in which all the individuals are highly pigmented, many of the facts which have hitherto been held to discriminate temperaments. We can recognize easily individual peculiarities — we can recognize also the peculiarities of race—but if the race be pure and the color uniform, we should have remarkably little to guide us. This statement leads obviously to the suggestion that I am perhaps involving myself in a fallacy, and that it may be the fact that what have been called the temperaments are observed almost solely under conditions in which the race is much mixed. It is certainly true that doctrines on this subject have been developed only under conditions of long-established civilization, and where the population represented those who derived their blood from various sources. Dr. Laycock has given a valuable hint in this direction, and has remarked that

we greatly need a British ethnology founded on well-defined and distinct characteristics. Thus, it might be, perhaps, much nearer the truth if we were to classify those who make up our own population not according to complexion, as fair, red, black, etc., nor by reference to certain more or less hypothetical vital tendencies, as lymphatic, bilious, sanguine, phlegmatic, and the like, but rather as Celtic, Scandinavian, Roman, or English. It is quite true that we should find a comparatively small number who could be definitely placed under any one of these heads, and that the large majority present features of racial mixture which would utterly defy classification. But the same difficulty has to be met by those who prefer to make groups under the head of temperament. A large majority belong to no one in particular, and partake of the characteristics of several at once. Modern historical authorities are desirous, I am aware, to have it believed that the English population is not mixed to anything like the extent which it was formerly the custom to suppose. They delight to claim us as *English* pure and simple, and to mean by the term direct, pure-blooded descendants of the Angles and the Saxons. They appeal to the fact of what is called the Saxon invasion—I must ask pardon, the *English* invasion—as to the entire extermination of the Romanized British population, from the land of which we are now in possession. They appeal also, and I must admit with more cogency, to the almost absolute substitution of a German language for the British tongue. There are, however, I think, good reasons why the student of race and believers in its permanency should hesitate to accept fully this new creed. We have among us far too many who possess not only typical Roman noses, but all the peculiarities of character which usually accompany the Roman cast of face. It is more difficult to feel certain as to the persistency of the British or Celtic element, since we know much less well what its peculiarities were. Whatever the evidence may be as to extermination by the invaders of the males who opposed them, nothing is less probable than that the women were included in the massacre. An army of invading and colonizing males would be certain to preserve sufficiently numerous representatives of the conquered race to effect a very material modification of the future stock. While on this subject it is also, I think, fair to suggest that the present frequency of the Ro-

man face in England, may not improbably be due in part to prepotency in that remarkable race.

Although I would by no means propose classification by race as likely to be of any great value in reference to clinical research, yet I do seriously think that it would be more practicable, and come nearer to the truth, than the classification by temperament. A glance at what has been attempted in the latter direction will, I think, convince us that even those who manifested the greatest ingenuity, and possessed the soundest and most extensive knowledge concerning health and disease, have been obliged, when describing the temperaments, to avail themselves of many criteria which are really the phenomena of disease. Chief among those to whom I allude stands one to whom I have myself been greatly indebted—my first teacher of medicine, the late Professor Laycock. With a power of insight which amounted almost to genius, Dr. Laycock had applied his mind to the study of the physiognomical diagnosis of disease, and by long practice in observations in this direction, he was enabled sometimes to give opinions which astonished those who were accustomed to more plodding methods of investigation. In a series of lectures delivered in 1861, and published in the following year in the "Medical Times and Gazette," he embodied the results of his experience. He believed that his rules of diagnosis were to a large extent based upon peculiarities of temperament, and he naturally gave great attention to the correct classification of these so-called fundamental states. For myself, I cannot doubt that the knowledge which he found so useful was based not so much on the discrimination of temperaments as on the recognition of diathesis. I could illustrate this statement by innumerable quotations from the lectures to which I have referred, in which features distinctly the result of bygone disease are mentioned, as if they formed part of the original organization. Our time will not permit that I should enter into any detail upon this point; but as Dr. Laycock's is, so far as I know, the last and certainly by far the best of all attempts to classify temperaments, I think it may be convenient that we should devote a few minutes to its consideration. He endeavored, as he tells us, to avoid the use of new terms, and to apply the old ones with definite meaning, as significant of predominant modes of vital activity. He recognized six divi-

sions—first, persons nervously active from predominant innervation; secondly, those with predominant sanguification and activity of the vascular and muscular systems; thirdly, those in whom both innervation and muscular activity are predominant, and this existing with also predominant carbon deposit or excretion—*the fibrous or bilious temperament;* fourthly, when the muscular system is well developed, but neither sanguification nor innervation predominant, and there is a decided tendency to the deposit of fat—*the phlegmatic temperament;* fifthly, those who are defective as regards innervation, sanguification, and muscular and vascular activity —*the lymphatic temperament;* and, sixthly, those in whom, with defective innervation, sanguification, and vascular activity, there is a combined tendency to carbon deposit—*the melancholic temperament.* Here we have, with a little expansion, the original four temperaments—sanguine, nervous bilious, and lymphatic. Let us ask if they are real, and if the features by which they are to be recognized are such as are likely to be permanent in the individual, and unmodified by alterations in his state of health. In the first place, I would suggest that the melancholic temperament and the bilious temperament are, after all, only different degrees of the same thing, and that, as life advances, the one is very apt to pass into the other; and, further, that the distinguishing feature in both is one which concerns disease rather than temperament, and which might be more conveniently known as the hepatic *diathesis.* It is the proneness to disordered function on the part of the liver, its ready and frequent occurrence, which for the most part stamps peculiarity on both these so-called temperaments. Further, it is much to be doubted whether this facility of hepatic disturbance would be found in association exclusively, or even generally, with any particular cast of the features, or, recognizable peculiarities in the general frame. Certainly it is not, by any means, the exclusive possession of dark-complexioned persons, nor, perhaps, does it more abound among dark-complexioned nations—the Italians, to wit—than among others. It is a matter of race, of family, and of climate. It may be diminished or aggravated by various conditions of life, and it is usually recognizable only after certain definite phenomena of disease have been already experienced. As regards its being worth while to distinguish any condition

as the nervous temperament because innervation is predominant—or, in other words, the central cerebro-spinal system is largely developed—much doubt may, I think, reasonably be felt. A high development of the nervous system is again a peculiarity of race and of family rather than of anything with which we as medical observers have to do. The conditions in which the nervous system is subject to disease are rather those of instability than of simple preponderance. The phlegmatic temperament gets its peculiarity from the tendency to fatten; but, as I have already observed, this tendency is shown in different periods of life, and is much modified by habits of diet and social surroundings. So of the lymphatic temperament, in which all functions are sluggish, and a general failure of what we may call "tone" is the conspicuous peculiarity. I would submit that this condition is not unfrequently induced by disease occurring during the lifetime of the individual, and not by anything which can possibly be denoted by peculiarities in the general formation. Dr. Laycock's classification of the temperaments is also, in common with the older ones, open to the criticism that, inasmuch as it takes little or no account of the more conspicuous differences in complexion, it affords us but few facts by which to recognize them. When a man is florid and muscular, it is not difficult to say that he is of the sanguine temperament; but these conditions are, perhaps, indicative rather of good digestion and sound health than of intrinsic peculiarities. The appetite may fail, or the health give way, and some of the signs supposed to denote temperament may easily vanish. Would it not be more convenient to speak of a man as being simply, for the time being, florid and muscular, than by the use of such a term as "sanguine temperament" to imply permanency in qualities which may easily prove to be otherwise? If we cannot identify the sanguine temperament by other characters, probably it would. The peculiarities which denote family and race must be viewed with the utmost caution, as well by the physiognomist in reference to character as by the physician in respect to tendencies to disease. They are usually of no use, and they may easily mislead. It is only indirectly that they may become valuable—that is, when the special proclivities of the race or family in question are known beforehand. A thick upper lip, when it occurs in a mulatto, denotes descent only, and not scrofula.

The peculiarities of the Hebrew features reveal only the race, and are of use to the physician only so far as he may be acquainted with the facts as to the special tendencies to disease in that race.

I have been speaking thus far on the subject of temperament considered as the aggregate of a man's physical personality, and have felt obliged to return the verdict that its study in this form is but little useful for our purposes as surgeons. It will I think, however, be well to say a few additional words respecting some of the individual peculiarities which have been held to make up temperament.

We will begin with the subject of *complexion.* The color of the hair, skin, and eyes may be easily observed, and although the English population, in a majority of cases, is a very mixed one, yet abundant opportunities occur of taking note of very definite types. Observations are yet wanting which would justify us in believing that any special tendencies to disease are implied by differences in the pigmentation of the hair and skin. It is, however, a subject of much interest for further research, and thinking that it might possibly be useful to others, I have placed before you a brief list of the more definite complexions which I prepared for my own guidance many years ago when investigating the subject of scrofula. In endeavoring to determine whether any given disease occurs in special connection with any one complexion, we are met at once with the difficulty that we do not know what the relative proportions of the several complexions are in the English population. Nor would it be sufficiently accurate for the purposes of any local observer to know the proportions of fair, rufous, dark, etc., in the British population generally, since these probably vary very considerably in different districts, and even in different towns. I cannot but think that careful statistics upon this head—collected in small towns and villages where it might be practicable to count the whole, and made, too, by trained observers—would prove of considerable value in more than one direction. It is in external diseases chiefly, such as lupus, psoriasis, and the like, of which the diagnosis is easy, that we should find the best opportunities for testing prevalence in relation to complexion. At one time I had formed a strong opinion that lupus, to take a marked example, was met with much more frequently in those of dark

complexions, persons of dark-brown hair, brown eyes, and a bluish sclerotic through which the pigment of the choroid is somewhat seen. I have collected a good deal of statistical evidence on this point, but it remains useless so long as we are ignorant of the relative proportions of the complexions among those from whom the cases came. It is probably the fact that both professional and lay observations concur in supporting the creed, that there are differences—mental, moral, and physical—between the fair and the dark; yet it would be exceedingly difficult to say anything definite as to what these differences are. I was myself taught by a careful practical observer, the late Mr. Wormald, that all persons of the dark complexion would bear mercurial treatment well, and would require larger doses than those who are fair. I have been accustomed ever since to act on this belief, and I think it is certainly well founded, although there are many exceptions to it. I have even gone farther than my teacher, and come to believe that a great many persons of the dark complexion not only bear mercury well, but enjoy better health while taking it, and are not unfrequently much and permanently benefited by a long course. It is but fair that I should admit, however, that one of the most remarkable examples of tolerance of this drug which I have ever met with, occurred in a patient of very fair complexion. Further, I have acquired, possibly on insufficient data, a sort of practical belief to the effect that dark-complexioned persons do not bear direct tonics well, that the need of purgatives is greater in them, and that they are often not helped by sea-air. Beyond these items of uncertain creed I cannot go, and even granting that they are sound, it remains still an open question whether the mere difference in pigmentation is, *per se*, their explanation. It may be after all that this difference in complexion is, as we see it in English society, mainly useful as a clue to descent, to family, and remotely to race. Many facts concur to imply this. When an albino chances to occur in a dark family (as is usual), he does not, I believe, show any special liabilities to disease, or differ in any way from his brothers and sisters, excepting in the local inconvenience as regards eyes and skin. White horses, white cattle, white rabbits, and white poultry are usually not possessed of any other correlative peculiarities. There is a prejudice, and probably it is nothing better, that they are slightly

more delicate than colored animals. The breed of pigs in the South of England is usually black, while in the northern counties white-skinned pigs are universally preferred. Such a fact is conclusive in proof that mere difference in pigmentation of the skin makes no material difference as to health or feeding capabilities. In the different breeds of sheep we have frequent illustrations of the power of race and family in giving peculiarity as regards the tolerance of climate and proclivity to some diseases. But the occurrence of a pigmented animal in any given breed does not, as far as I am aware, entail any difference as regards health. The only observation with which I am acquainted which contravenes this statement is one quoted by Mr. Darwin, to the effect that black sheep can eat with impunity a certain species of *Hypericum*, which is poisonous to white ones. This observation is so peculiar and so isolated that it must be held to require further confirmation. Possibly, the strongest instance in illustration of the unimportance of difference in general pigmentation occurs in the case of the common ferret. These animals breed albinos very readily, and probably three-fourths of those at present in use in England have red eyes and white hair, the remaining quarter being of a dark-brown color. So far as I know, the one is just as hardy as the other, and they are fed and treated in every way alike. Thus, then, I think we may believe that in the English climate the abundance or comparative absence of pigment in the tissues does not, *per se*, make any appreciable difference in the vital endowments of the individual. I am far from wishing to imply in saying this that the study of the complexions, as regards pigment, is useless for clinical purposes. Its uses have, however, for the most part, yet to be discovered, and it is desirable to note, in passing, that although we name the complexions chiefly in reference to pigmentation, something more than simply abundance or deficiency is to be recognized in them. Thus, the rufous complexion is due not merely to deficiency, but to peculiarity in quality, and is probably usually the result of the mixture of dissimilars. It is very likely that a careful observation of a larger number of rufous persons would confirm the popular belief that they do display peculiarities, not only in temper and general character, but to a certain extent as regards proclivity to disease. Again, the occurrence of great differ-

ences in color between the eyes and the hair, the eyes being much lighter than the hair—as, for instance, black hair with blue eyes—is probably an indication of delicacy. This, at any rate, is the general belief.

Next in importance to the differences in pigmentation we have certain other conditions which are usually included in what is meant by complexion, such as the thickness or thinness of skin, its transparency, the development of its glandular system, and the state of its appendages. I dare not venture to say more respecting most of these than that they are well worthy of further observation. We have exceedingly little definite information regarding the clinical value of any of them. We know that thick, coarse skins are more liable to be attacked by acne than are those which are thinner; or, rather, perhaps I ought to say that acne assumes different forms in relation to the original endowments of the skin which it attacks. In those of coarse skins, comedones, papules, and pustules easily form, or we may even have a condition of tuberous hypertrophy, while in those of thin, transparent skins, if the causes of acne come into operation, an erythematous condition will be produced, and the term *rosacea* become applicable. We believe—I scarcely dare say that we know—that in children in whom the hairs are thick and coarse the ringworm fungus finds an uncongenial home. It might be possible to mention a few other detached observations as to certain peculiarities in the skin and its appendages, not themselves due to disease, which may guide us in estimating the future liabilities of the individual. As a matter of general observation it may be asserted that all marked deviations from the normal type should be held in some degree of suspicion. Thus, if the hair is markedly coarse, or unusually fine, if the skin be very thick or very transparent, we are perhaps justified in suspecting that there may be in other tissues similar departures from the average constitution, some of which may prove inconsistent with the preservation of perfect health. For the present, however, it is speculation only. Of accurate observations we have none. The teeth and the nails may be suitably mentioned together as structures in which we very frequently observe with great interest and profit the indelible consequences of past disease. These, however, belong to the subject of diathesis, and do not

concern us now. As regards peculiarities of these structures occurring quite independently of previous disease, our knowledge is much in the same state as on the subject to which I have just referred. Peculiarities in the form of the teeth are often matters of family descent, and teach us nothing as regards their possessor's liabilities. It is probable, however, that all peculiarities as regards color and texture of teeth are of value, in proportion as they depart from the normal standard, as indicative of defective tissue formation in general. Dr. Laycock, in the interesting lectures to which I have alluded, has examined at much length the various conditions of the ear as indicative of temperament and diathesis. He believed that the form of the ear was of great value as a clue to the original development of the brain, and that the state of its nutrition, blood supply, etc., might help us to estimate corresponding conditions within the cranium. His conclusions in the main are probably correct, but we may doubt whether he did not push matters too far in assigning a special state of ear to such conditions as general paralysis, and in considering in reference to this disease that the congenital adhesion of the lobule to the cheek had some degree of significance. His observations had led him greatly to prefer ears which had free lobules, and these, too, of considerable size, which had all their different parts well marked, and which were moderately fleshy, not thin and cartilaginous. As regards the matter of the lobule, it may be plausibly suggested that its adhesion or otherwise indicates only family descent, and implies nothing as to temperament, and the same to some extent is probably true as regards the state of the helix and other parts. Making allowance, however, for sources of fallacy in these directions, I think there can be no doubt that the different states of the ear, as well congenital as acquired, have been unduly neglected both by the physiognomist and the physician. The ear affords excellent facilities for observation as to the general state of nutrition and circulation, and the degree of perfection in its form is a tolerably safe guide as to the descent of the individual from a sound and well-bred stock. That it furnishes a clue to the state of circulation in the brain better than does the color of the cheeks and nose, or anything like as good as that afforded by the brightness of the eyes, may be doubted, and before we make inferences on this point, we

must remember that the ears, as well as the nose, are remarkably exposed to the influence of external temperature.

I have said so much in disparagement as well of the general as of the special signs which have been held to indicate temperament, that I fear it may be suspected that I almost doubt the reality of temperament in itself. If I have given that impression let me hasten at once to remove it. There can be no question whatever as to the reality of the difference between individuals, nor any doubt as to the importance of the recognition of those differences by the medical practitioner. By far the commonest error of the prescriber, and one which most interferes with his success, is the easy-going habit of regarding all persons as alike, and recognizing differences only in their diseases; or, to put it in other language, of ignoring the predisposing causes, and taking account only of immediate ones. The farmer who would succeed in his pursuits must not content himself with making sure that he has sown good seed, and according to the most approved methods. He must go further back to take knowledge of the nature of the soil with which he has to deal, of the crops which it has previously borne, and of the manures which have been used. It is much the same with us in the diagnosis and treatment of disease. In addition to the primary or exciting cause, which is of paramount importance, we have various others which may perhaps be conveniently classed together under the term *contributory*, since they contribute to control and modify final results. Among these, temperament—the original vital endowment of the individual—is unquestionably a real force, and one which we would most gladly recognize and estimate if we could. The scepticism which I have been expressing applies not to the reality of the thing, but to our ability to discriminate it. I shall have to speak in my next lecture on the subject of idiosyncrasy, and one of the facts which I think will come before us in the clearest possible light is, that we possess no means whatever of recognizing by external configuration the subjects of these remarkable deviations from the normal state. Who shall discover beforehand the subject of hay asthma or the man in whom the iodide of potassium will act like a poison? When I come to the subject of diathesis we shall be on wholly different and far firmer ground. Defining diathesis as a persisting morbid proclivity we shall be able to show that in a

great many instances, either by the aspect of the individual, or the history of the case, a clear and definite opinion can be arrived at. The differences which have been held to constitute temperament have had their remote origin in two sources of influence; first, the hereditary transmission of the peculiarities incident to race and family, which, for the most part, entail no morbid proclivity whatever; and, secondly, to some one or more of the various common causes of disease acting, perhaps, through many generations. Thus, I cannot but think that what has been called temperament divides itself naturally into these two parts, *race* and *diathesis*. There is therefore but little advantage in retaining the word, more especially when we have regard to the inextricable complexity of the subject. As regards diathesis, the conditions are very different. We can study the results of different causes in detail and with much precision; we can express our knowledge in clear terms, and recognizing the fact that we frequently encounter several of these causes in activity together, we can investigate with interest the mixed forms of diathesis which result. We do not embarrass ourselves by admitting extraneous complications based on the peculiarities of race. Making due allowance for acclimatization, we assert that, within certain limits,—not wholly unimportant, but relatively very much so—the various causes of disease act in the same way on individuals of very different races. It is in this direction, if I am not mistaken, that the work of the future will be done. We shall see that the connection between special diseases and the external configuration of the body is less close than has been assumed, and that the best plan is to study carefully the scope of power of each kind of morbid influence under the varied circumstances which may attend its action.

LECTURE II.

Mr. President and Gentlemen,—We concern ourselves to-day with some of the most remarkable facts in respect to what is known as *Idiosyncrasy*. In the definitions which were attempted in the previous lecture it was fully admitted, nay insisted on, that this word is intended to denote our ignorance of causes, though in no degree to express disbelief in their existence. Probably this ignorance will be, in most instances, only temporary, and the results which we need assign to idiosyncrasy and leave thus unexplained will, one by one, be transferred to the domain of the several diatheses concerning the causes of which something, at any rate, if not all, is known. Idiosyncrasy is, indeed, to a large extent, nothing but diathesis brought to a point. It is peculiarity of constitution in some one particular feature developed to a height which at first sight seems inexplicable and possibly almost absurd. It is individuality run mad. In seeking to understand the real nature of that with which under this name we have to deal, we must keep in mind that it is by no means always the isolated phenomenon which at first sight it appears. For one man who rises to the height of peculiarity which deserves the name *miser*, there are a thousand in whom the quality of thriftiness is developed in various degrees beyond what is praiseworthy. The miser is only the thrifty man developed in great excess. So it is with the relations between diathesis and idiosyncrasy; for one person who cannot take the smallest dose of quinine there are thousands who betray unusual susceptibility to the drug, and many of them in high degrees. Here, I think, we gain an insight into the way in which idiosyncrasies possibly take their origin. They are diatheses, or parts of diatheses, developed, intensified, and specialized by hereditary transmission. That they depend upon structural peculiarities we cannot doubt, although we may be quite unable to demonstrate their physical cause. The man who is

poisoned by a drop of atropine solution applied to his conjunctiva is as certainly the subject of some peculiarity in his nervous organization as are those who cannot distinguish red from green, or those who are born without the sense of hearing.

It may here be remarked that the term idiosyncrasy is not, I think, ever applied to acquired peculiarities, but solely to those that are congenital. Some, perhaps, may be overcome; many, as age advances, undergo modification, but, as a rule, all are present at birth, and persist through the whole of life. It is probable that all, when once developed, are hereditarily transmissible, and I am obliged to believe strongly that if inquiry were made we should, in almost all instances, find that all strongly-marked idiosyncrasies had been present in some degree in former generations. I suggested in last year's lectures, and with, I think, much plausibility, that the hemorrhagic diathesis—so strongly hereditary when once produced, unknown in the lower animals, and frequently coincident in the individual with gout—has its origin in the peculiarities of vascular structure which are developed by gout, and which have become modified and specialized by transmission through many generations. So I would venture now to ask consideration for similar hypotheses in reference to the other forms of idiosyncrasy of most, or of all, of which every fragment of genealogy has been lost.

We have defined idiosyncrasy to be a peculiarity of the individual, usually a rare and exceptional one, which does not necessarily entail any degree of proclivity to disease, but which may become obvious under a variety of exciting causes. It is often much as if by the introduction of some test solution, a chemist should discover the presence of chloride of sodium, or some other salt, in water which he had had no reason previously to suspect. The various incidents of life in connection with diet, drugs, and the exposure to the ordinary cause of disease, apply these tests for us, and most unexpected revelations do they sometimes make. We find that an individual apparently in no respect different from those around him, is poisoned by the smallest quantity of some ordinary drug, or that he cannot digest some one article of diet which is daily food to his companions; or, again, that the virus of some specific fever either produces on him no apparent effect, or may be attended by symptoms of tenfold their usual violence.

Sometimes it is an extraordinary immunity which is revealed, and sometimes an almost incredible degree of susceptibility.

We can never predicate anything as regards idiosyncrasies of function until the trial has been made. There are, however, a certain class of individual peculiarities of the same nature which do not always remain concealed. I allude to those in which the structure of some external and visible organ is affected. The peculiarities which we have hitherto classed as idiosyncrasies concern function only. But a moment's consideration will make it evident that they must depend on structure, and that they have really exact parallels in certain congenital defects or peculiarities in external organization, which may or may not entail inconvenience to the individual. A coloboma of the iris is a structural idiosyncrasy, so also is the persistence of the nerve sheath in the retinal nerve fibres in the human eye, which the ophthalmoscope occasionally reveals. And each of these peculiarities may, indeed must, entail some degree of deviation from the normal condition of vision. It is true that some congenital defects of structure occur in such an irregular manner that we prefer rather to class them, at any rate for the present, as mere accidents of development, or freaks of nature, than as idiosyncrasies; such are, for instance, moles, nævi, and the like. In the idiosyncrasies, however marvellous some of them may be, there is usually to be noticed a certain reference to law and order. They do not occur absolutely by chance, and they often appear to be correlated with other less startling peculiarities, and they often happen to several members of the same family, or are distinctly hereditary. I have instanced coloboma of the iris as an example of congenital idiosyncrasy of structure, and by its side I might put hare-lip, clefts in the eyelid, absence of the levator palpebræ, and many similar defects.

These congenital peculiarities of structure which do not entail any tendency to advancing disease of the whole organization, but remain permanently local, and must, therefore, rank as idiosyncrasies rather than diatheses, are not always apparent at the time of birth. Thus, a child may be born with its skin, so far as can be observed, in a healthy condition, but in whom within a few months of birth a harshness will be noticed which will steadily develop itself into the typical condition of ichthyosis. If this happened to but a single child in

a family we might search about for some cause of disease to which the infant had been subjected. But, if it happens to child after child in the same family, we cease our quest in this direction, and begin to feel certain that it must depend upon some congenital peculiarity in the structure of the skin itself.

Permit me next to ask your attention in some little detail to two groups of facts recently brought under my notice which will illustrate my argument. Mr. Balmanno Squire was kind enough last autumn to bring for my inspection a series of cases of most unusual interest. Very briefly the facts were these: Three children from the country, two sisters and a brother, of apparently healthy parentage, and having several other brothers and sisters who ailed nothing, were themselves the subjects of a malady the precise counterpart of which I had never seen before. It was exactly alike, with some minor differences of degree, in all the three children. Had it been a congenital deformity or arrest of development, its occurrence in several members of the same family would have been nothing remarkable, and we should have been able to place it, without any fresh wonderment at the marvels of pathogenesis, by the side of ichthyosis, color-blindness, deaf-mutism, and other well-recognized family diseases. But the malady in question by no means fitted closely with these. It had not been congenital in any one instance, but had developed in each child some years after birth. It consisted in an inflammation of the skin of the face and upper extremities, which had covered them with crusts and scabs, and which on some parts of the face, the nose especially, had caused ulcerations exactly like lupus. In fact, any one seeing the nose only would have had no hesitation in naming the disease lupus. But on the arms it was different. Here there was no evidence of new growth and very little of ulceration, but simply a diffuse, more or less pustular inflammation. From the occurrence of the disease on those parts most exposed to the air it was to be assumed that such exposure was the exciting cause. As it had not materially varied with season, and as the feet had not suffered from chilblains, we may conjecture that the irritating influences were wind and sun rather than direct cold. Let it be noted that in each of these three cases the disease had persisted for several years, and, allow me to repeat, that in all three children it was essentially alike.

What a lesson have we here as to the possibilities of hereditary diathetic proclivity! It may easily be the fact that not in the whole population of the British Isles, at the present moment, another case could be found which should offer anything approaching at all closely the disease I have described; and yet it had been possible, in the cases of three children, for the influence of parental combination of tendencies to be so definite and so peculiar, that they all developed it in precisely the same form. I have already mentioned ichthyosis as affording us an example of a disease which is often met with unexpectedly in many members of the same family, and probably, after all, it affords us the nearest parallel which we can find to these cases. It, however, in greater or less degree, is tolerably common, and generally there is some history of its having happened in former generations. It, too, is very often congenital, or if not actually present at the time of birth, it develops so soon afterwards, that we can easily believe that at any rate the peculiarity of skin giving tendency to it was congenital, and was of the nature of an arrest in the perfection of development. In the cases which I have described, however, the mind less easily grasps such an hypothesis, the disease being distinctly of an inflammatory kind, not affecting the whole surface, and not beginning until a considerable period after birth. Ichthyosis, for the most part, appears to be independent of local exciting causes, though it is by no means wholly so; and we must remember that in Mr. Squire's cases, although local causes are clearly influential, they have been so trivial in amount that we are obliged to place the inherited proclivities of the tissue in by far the foremost position.

Inherited proclivity of tissue of a similar kind, that is giving tendency at a certain age, under very insignificant exciting causes, to definite and peculiar forms of inflammation is probably a thing which we very frequently encounter in practice, but it is not often that we can demonstrate its reality in such a striking manner as Mr. Squire's series of cases enables us to do. It is chiefly on this account, although in itself an extreme rarity, yet teaching us a wide lesson, that I have thought it worth your attention. When we see tubercular disease of the lungs manifest itself in one after the other of a number of brothers and sisters without obvious cause, and run its course in each unchecked by treatment, we probably witness

an illustration of the same pathological law. It is to be remembered further that, although it is only when several members of the same family show tendency under the same circumstances to disease of the same part that the doctrine of inherited proclivity of tissue is strongly enforced, there is yet every reason to believe that the same cause is operative in countless examples of disease occurring only in single individuals. During the winter session just past two series of remarkable examples of xanthelasma in children, and in several members of the same family at the same age, have been brought before the Pathological Society. In one of these two brothers and a sister, now adults, were shown by Dr. Stephen Mackenzie, all three the subjects of xanthelasma in a slight but definite form, and all with the history that it had been noticed at birth. Mr. James Startin showed a brother and sister, still young children, in whom similar conditions were present in much more conspicuous forms, and in whom they had been noticed within a few years of birth, but were believed not to be congenital. In all these cases the changes are symmetrical, and occur in the limbs, neck, and trunk, omitting that part most usually affected when the disease developes, *de novo*, in adults, namely, the eyelids. In none is the affection attended by any derangement of general health, or tendency to liver disorder, and it seems probable from Dr. Mackenzie's cases that there is no tendency to increase, the three patients, now adults, having been in their present condition from early childhood. Thus, the general features of the malady differ exceedingly from those of the more common form as we see it in adults, and approach those of some other forms of skin disease—psoriasis and ichthyosis, for example. Histologically, however, the local changes in those cases are those of xanthelasma, and as such we must class them. In Mr. Startin's case the resemblance to psoriasis, as regards symmetry and location of patches on the tips of the elbows, etc., was very marked.

If speculation respecting such rare conditions may be permitted, I think it should proceed somewhat on these lines. We know, respecting psoriasis, that it is very hereditary, persisting through many generations, but rarely showing itself in more than a single member of the same family, and not unfrequently undergoing apparent transmutation into other

forms of skin disease, as, for instance, nummular eczema, lichen ruber, pemphigus, and ichthyosis.

Of its connection with the latter malady—parents the subject of psoriasis having ichthyotic children—I adduced some evidence in my last year's course of lectures. Of ichthyosis itself we know that it usually occurs in several members of the same family, is hereditary, but often omits a generation, or fails to descend in the direct line. Xanthelasma we have as yet known only as a disease which occurs chiefly on the eyelids of adults who have suffered from liver disorder, and which hardly ever in adults develops on other parts of the skin, excepting when in connection with jaundice. It is in part a new growth, and in part a fatty degeneration, and its peculiarities as regards color, etc., clearly have a close connection with the presence of bile pigments in the blood. I do not think that there can be much dispute as to the possibility of inheritance of any tendency to tissue change which has existed for a long time in the individual who was its first subject, and in whom it had showed itself a considerable time before the birth of offspring. Nor is it in the least certain, perhaps not even probable, that such hereditary tendency would be manifested in the first generation. If we apply these facts to the explanation of the occurrence of xanthelasma as a family, and almost as a congenital disease, apparently of no diathetic significance, I think we should conjecture that it is probably derived from some progenitor who had acquired the ordinary hepatic form of adults. And further, I cannot help the suggestion that it is possible that this inheritance has met and combined with a degree of proclivity to that group of skin diseases of which psoriasis is the best type.

Let me recapitulate: If a child shows within a year or two of birth yellow tubercles on its elbows, and delicate yellow streaks and spots in the flexures of the hips and popliteal spaces, exactly such as we are familiar with in connection with severe jaundice in the adult, and with jaundice only, we at first seek for evidence of disease of the liver. But if we find similar conditions produced at about the same age in two or three members of the same family, and the same series of events happening in more than one family, we again, as in the case of ichthyosis, cease our search for the ordinary causes of the disease, and fall back upon the hypothesis of what I

have ventured to term structural idiosyncrasy. We feel sure that the skin of the parts affected must have been at birth in a state of peculiarity, although we failed to be able to prove it. It is, of course, possible that the congenital peculiarity was not in the skin alone. It may have been in the blood also; but if we observe, in the subsequent life of the patient, that the peculiar conditions remain restricted to the parts first affected, that they have no aggressive power, and that the general health of the individual does not suffer in the least, our first impression as to the idiosyncrasy being purely one of local structure becomes revived and strengthened.

I am yet very anxious to make clear the argument that congenital structural peculiarity may entail liability to local disease, and that such disease may be locally aggressive—at any rate, for a certain time, perhaps indefinitely—because I think it is one which may, probably, explain a large class of pathological facts, some of which are of a far less definite character than those to which we have just referred. Let us use ichthyosis and xanthelasma of young children as definite and palpable illustrations of what is possible, although admittedly rare, and guided by the light which we obtain from their investigation, let us examine the facts as to some other much less definite maladies. In the condition known as molluscum fibrosum, little tumors—possibly fibro-cellular, possibly glandular—develop in or under the skin. Usually there are very few of them, and examples of the malady, when only two, three, or half-a-dozen are present, are very common. In rare cases, however, the whole surface is affected, and the tumors may be counted by hundreds, or even thousands. The tendency to their production may be noticed for the first time at almost any period of life, but if they are to be numerous, it begins almost invariably in early childhood. Whether there be many, or whether there be few, the general health remains good, and there is no evidence whatever of any correlated tendency to general disease. Is it not very probable that the liability to molluscum fibrosum is inbred in the original development of the integument, that we are witnessing the results of an idiosyncrasy of structure? Let us see how the matter stands as regards common psoriasis. In this instance we have no new growth of tumors, but only a tendency on the part of special regions of the skin, possibly of almost the

whole of it, to take on a certain peculiar type of chronic inflammation. This tendency occurs in its best marked forms, and most frequently to young persons, although, let us note, it is never congenital, and never even infantile. It is never associated with anything that we can appreciate as ill-health, and the facts with which we are acquainted as regards the conditions which may influence it for the worse, are few and insignificant. Excepting so far as it may be supposed to act by interfering with the functions of the skin, it does not produce any derangement of the patient's health. It is hereditary, but not prone to prevail in many members of a single family. Is it not probable that a disease, of which these statements are true, is one not originally or wholly due either to the blood or to the nervous system, but in large, and chief part, to an idiosyncrasy in the structure of the skin? In proportion as the disease is late in its development—in other words, in proportion as we find it apparently waiting for the exciting influence to assist its birth—may we assume the probability that the idiosyncrasy is less strong. The explanation of the entire absence of psoriasis in infancy and early childhood may possibly be found in the suggestion that, when the structural idiosyncrasy is very strong, it manifests itself in a different form. Thus, I think it not improbable that ichthyosis of infants may be in this way the representative of the psoriasis tendency in its intensest form. I must not weary you in arguing the case in reference to other diseases of the skin, or of other parts, but simply state that whenever we find a strictly local malady which develops itself in all instances with little or no apparent cause is hereditary, is but little aggressive, and only in a sort of accidental way influences the health of its subject, we are entitled to suspect structural idiosyncrasy. Steatomata on the scalp, lipomata, adenomatous tumors in the breast; multiple uterine fibroids, milium, whether on the face or elsewhere, and a host of others, are probably examples of what I have tried to describe. From these it needs but little ingenuity to perceive that it is only a matter of degree if we should pass to the development of new growths in general, both malignant and innocent, and to many disorders which do not fit at all exactly with the description which I have given and concerning which we can say a good deal as to our knowledge of their exciting causes. In a mul-

titude of these, hereditary, but wholly latent, peculiarity of structure may not improbably take its share in the production of the special result. They are examples of what may be termed complicated or conditional idiosyncrasy.

I must hasten to other departments of our subject. As surgeons we have to encounter the results of functional idiosyncrasy chiefly in reference to drugs and the specific fevers. The department of diet I ought, perhaps, to leave to physicians, yet it is impossible that I should wholly do so. For the patients who consult us about other maladies will often describe to us symptoms which we should wholly misinterpret were we not familiar with what is possible in reference to diet idiosyncrasy. A few years ago it fell to my lot to become much interested in the subject of idiosyncrasy as regards eggs. Several patients consulted me within a short period, who, among other symptoms, described a liability to attacks of violent vomiting, or of a sense of sinking and abdominal distress which were to them inexplicable. In more than one of these the reason of my being consulted was that the attacks were attended by temporary defect in sight. In one instance the patient was an artist, who declared that frequently he was quite unable, for several hours at a time, to see to paint. His defect seemed to be a temporary suspension of the power of accommodation. It always affected both eyes, and was always attended by a sense of heat at the stomach and abdominal discomfort. I found that these attacks usually occurred within an hour or two of breakfast, and on entering into detail I became convinced that they were due to eating eggs. On telling my patient my conclusion he replied at once that he had always suspected it, yet being very fond of eggs, he had indulged in one once in a month or so. He was quite cured by abstinence. In several of the cases to which I refer, the symptoms produced were far more violent than in this one, and had been so severe on some occasions as to lead to the suspicion that poison had been given. In some cases susceptibility as regards eggs is observed in reference to all eggs, and in all conditions as regards freshness, and in respect also to the very smallest quantity, so that a little egg taken in a pudding, a sauce, or a soup, may produce the most definite disagreement. In some the susceptibility is invariable, but in others it may be much diminished, or entirely removed when

its subject is in unusually good health, or taking much exercise in the open air. In many instances the liability to egg-poisoning is manifested only in respect to the eggs of certain birds, or eggs under certain special conditions as regards cookery or keeping. Egg and fish, the two articles of diet respecting which most is to be said as regards peculiar susceptibilities, are, it is to be remembered, the two which are most easily capable of peculiar changes from over-keeping. A fish which is quite wholesome when absolutely fresh may become exceedingly otherwise if kept only for a few hours after death, a fact with which those who live in hot countries are abundantly familiar. The same is true, though to a less extent, in respect to eggs. Eggs are perhaps as much influenced by methods of cooking as by mere keeping, and I may remark in passing that the examples of the most violent egg-poisoning which I have known have occurred to individuals who, having manifested the idiosyncrasy to some extent at home, had incautiously partaken of articles containing eggs while travelling abroad. Among various other articles of diet respecting which peculiar susceptibilities are frequently shown, we have honey, tea, coffee, various fruits and vegetables, and various forms of alcoholic beverages. Cases of what deserve to be known as *tea-poisoning* are probably by no means infrequent, but the medical adviser who, having become cognizant of some of these, should straightway proceed to discourage the use of this beverage by all, would be making a very wide departure alike from the laws of clinical induction and common sense. We have to deal with idiosyncrasy, and must apply our knowledge under the limitations of its laws. It must be remembered, however, as I have already asserted, that idiosyncrasy by no means declines to enter into partnership with other causes of functional disturbance more easy to be understood. The varying state of the patient's health at different periods of life, and varying habits as regards diet at different times, may conceal or bring into unusual prominence an idiosyncrasy which is itself a permanent condition. In many patients susceptibility to the influence of tea is much increased by taking certain wines, notably champagne, and is diminished by malt liquors and the red wines. As a rough rule, all idiosyncrasies become aggravated when the tone of the system is low, and many of them pass into almost

absolute abeyance under conditions of unusual vigor and health.

Idiosyncrasy in respect to tobacco displays itself in two forms, and one of them is of unusual interest, since it exemplifies a class of idiosyncrasies which are very apt to be misunderstood. I refer to those in which the individual susceptibility is not displayed immediately on the incidence of the exciting influence, but waits, it may be, for a long time, and until possibly other conditional causes come to its assistance. A little thought will probably supply most of us with examples of this class of idiosyncrasies, and they are very important in practice. A man who has drunk tea all his life, and largely, may rather suddenly find that it is almost poisonous to him, and may then recollect that one or more of his relations have never from childhood been able to take it. It is the same with eggs, fish, and certain kinds of wine, and so also with various drugs, and in all these instances it is, I believe, quite possible that the display of the idiosyncratic susceptibility may be only temporary. In some instances we may discover in some change in the mode of life or habits of diet, or in advancing age and possibly some visceral degeneration, an explanation of the newly-discovered peculiarity, but in other cases nothing can be found.

Tobacco, I think, stands curiously alone among the articles in human use in that it almost invariably in the first instance acts as a powerful poison, and that tolerance can be acquired quickly and certainly by almost every one. There are, however, great differences in the degree of susceptibility, and in the ease with which habituation is obtained. Many never do obtain it, and although this in most cases may be merely the result of want of perseverance, there is a certain number in whom it would appear that the primary idiosyncrasy is insuperable. Many persons who have acquired tolerance of one kind of tobacco remain susceptible to others, and after having been habitual smokers for years, may be made very ill by inadvertently using an unaccustomed kind. Many smokers, I believe, recognize periods during which the pipe disagrees with them, and they are obliged for a time to abandon it, and very curious symptoms, such as absolute suspension of the sexual appetite, etc., are sometimes with confidence alleged as consequences of its excessive use. But the cases which are of most

interest in connection with our present subject are those in which without any excess and in persons who have been for long thoroughly habituated, tobacco suddenly begins to act as a poison without causing any distaste or any conspicuous derangement. These patients are often quite unaware of what it is which is hurting them. They lose appetite and become nervous, and among the most conspicuous symptoms is a very marked failure of sight. This failure differs from all other forms of amaurotic amblyopia. It always affects simultaneously and equally both eyes; it begins very insidiously, and having no other symptom than diminution in acuity of vision, is often scarcely recognized by its subject until at the end of six weeks or two months he finds that he can only read the largest type. When at its height the optic disc is usually red and a little hazy, and at a later stage it becomes decidedly pale. If the patient will for a while leave off smoking he will regain his sight almost to a certainty, but, however perfect may be his apparent recovery, the disc is almost always left pale. He may resume the habit after awhile without much risk of relapse if he keeps to strict moderation, and in some cases recovery takes place, although the abstinence has never been complete.

Such are some of the principal facts respecting Tobacco Amaurosis. I have felt justified in stating them in this positive manner because I published in a series of reports some years ago in the "Ophthalmic Journal" and the Royal Medical and Chirurgical Society's "Transactions" very full details respecting them. That the symptoms in question are really due to tobacco I cannot feel the slightest doubt. I have seen no cases quite parallel to them either in women or in non-smoking men. If in these two classes of patients similar symptoms should be presented, which is very rare, I believe that they always progress without interruption to almost total blindness. Tobacco amaurosis rarely happens to novices in smoking, and seldom except to those who are liberal in the indulgence. Half an ounce of shag per day has been the usual allowance in the cases which I have collected. In support of my interpretation of the facts I may briefly advert to the history of our knowledge of them. Long before the ophthalmoscope-diagnosis was made out, Dr. Mackenzie, of Glasgow, and several French observers, had recognized the malady, and

alluding to the difficulty met with in persuading its subjects to abandon the habit, Dr. Mackenzie had used the expression, "There are many who would rather smoke than see." Mr. Wordsworth, at Moorfields, was, I believe, one of the first who studied the opthalmoscope-diagnosis, and he held that the conditions displayed by the disc were pathognomonic. It was to his teaching that I was chiefly indebted for my first interest in the subject.

I must hasten to the narration of certain facts which show that this disease is really a matter of idiosyncrasy, and that we ought, by recognizing this fact, to explain the circumstance that such a very small proportion of smokers ever suffer from it. This immunity of the greater number and the picking out of one here and one there has been a great stumbling-block to many in the way of accepting this doctrine. I cannot think that it ought to have been so if due allowance be made for the influence of idiosyncrasy. The facts to which I first alluded as supporting the belief that this influence is really at work are the following: Not very unfrequently the subject of tobacco amaurosis is one who was well aware of his susceptibility, who had experienced unusual difficulty in learning to smoke, and who had never been able to change with impunity from one kind of tobacco to another. Some years ago a young man came under my care who was a smoker, and who had smokers' amaurosis. Subsequently his mother, who did not smoke, came to me for an almost similar state of things, and I then learned that a nephew of hers, a smoker, had suffered just like his cousin, and had been under the care of my colleague, Mr. Hulke. I applied to Mr. Hulke for his diagnosis, and he kindly sent me a copy of his notes, showing that he had considered it a tobacco case. Here, then, we have three near relations presenting the same form of disease. In the woman, who did not smoke, the disease did not show itself until twenty years later in life than in the two young men who did, and in them, on abstinence, the disease was arrested, while in her, in whom no change of habit could be made, it increased. Can we doubt that we have here an instance of family proclivity?

I have yet to mention a stronger case in proof that special susceptibility may exist in a family. A hard-worked Welsh clergyman had been accustomed to irregular meals, and had consumed in large quantities a cheap, strong tobacco. He

became nervous, and almost blind, and he recovered on giving up smoking. He told me subsequently that two of his brothers, farmers, had experienced precisely similar symptoms, and apparently in connection with the same cause. I did not see either of them, but I believe both were, like himself, almost wholly cured by abstinence from smoking. These two groups of cases, in each of which more than one member of the same family suffered from the same cause, bear to my mind very strong evidence in favor of the opinion that it is under the laws of idiosyncrasy that we must seek the explanation of chronic tobacco poisoning. It occurs to those in whom the nervous system, possibly the nervous tissue, has susceptibilities which are not shared alike by other members of the community. I have alluded to the fact that this susceptibility is not usually simple or immediate, as in the case of arsenic; it is almost always in those who have been long accustomed to smoking that these nerve phenomena occur, and they are probably indicative of a state approaching to saturation. If it be asked what are the other contributory causes which assist in producing the outbreak, I should be inclined to suggest that very varied influences which reduce tone may help; over-work and anxiety may assist, and so probably may the sudden loss of outdoor exercise. I do not think that the use of stimulants is often a contributory cause, at any rate, not unless to such excess as to interfere with appetite for food. Many facts which have come under my notice suggest that total abstainers from alcoholic beverages are, if they smoke freely, in much more danger of chronic tobacco-poisoning than those who drink them.

Respecting idiosyncrasies as regards *Arsenic*, I have to remark that they are not nearly so marked nor so common as those respecting some other drugs. I have met with exceedingly few cases in which small doses disagreed. It is very exceptional indeed that a patient complains of inconvenience at the outset of a course. Usually, symptoms occur after the drug has been to some extent pushed, and they for the most part necessitate its discontinuance or reduction. I am alluding now to the well-known symptoms of conjunctival irritation and pain in the stomach and bowels. Respecting these, I think, tolerance is never obtained, and if once they have occurred they are prone to occur again if the same doses

are given. In English practice, individual susceptibility to arsenic does not seem to vary much. Most persons, as I have said, can take it, and very few can take more than a certain dose. I have never myself seen a case in which it could be pushed beyond a certain point without definite disagreement. The most remarkable fact in reference to idiosyncrasy is its occasional production of the form of neuritis which we know as herpes zoster. It is now more than ten years since I published a series of cases illustrating the occurrence of herpes zoster in patients who were taking arsenic, and since then I have seen so many other examples of it that I cannot entertain the slightest doubt as to the direct connection between the two. The herpes eruption may occur in the forehead, face, or trunk, and it is wholly indistinguishable from the herpes in these regions which is not due to arsenic. It runs the usual course and disappears after its normal duration, whether the arsenic be continued or not. The patient does not, as a rule, show any constitutional symptoms of arsenic intolerance, and it is almost invariably the case that he has taken the drug for some weeks before the symptom appears. The advent may now and then be delayed until a week or ten days after the course has been suspended. A precisely similar interval is sometimes seen in cases of sympathetic ophthalmitis, in which affection—probably, also, a form of neuritis—the inflammation of the second eye may begin to develop a week or ten days after the entire removal, by excision, of its cause. These facts would suggest that the neuritis is in each instance slow in its stages, and that, having been once initiated, its local processes cannot be stopped. The number of those who show arsenical herpes is very small in proportion to those who escape, and, if it is to occur at all, I think it always happens during a first course. I have never seen it in a patient who had been accustomed to the drug for a long time. Thus, its occurrence must certainly rank as the result of an idiosyncrasy; and this suggestion opens the way for the further one—that we ought, perhaps, always to regard herpes zoster as, in the main, an indication of personal peculiarity. It certainly does not appear that all persons are equally liable to it, since it happens to but very few, and is never associated with any special form of ill-health. Excepting the single fact, just alluded to, of its occasional production by arsenic, we know of no causes which

can evoke it. I have seen arsenic produce herpes in two different regions at the same time, but I do not remember to have ever witnessed a second attack in the same individual. In reference to this, however, it is but fair to add that I have usually carefully avoided this drug after an attack of shingles, since the latter is often a very serious trouble. A few persons —a very few—are liable to the occurrence of an eruption of herpetic vesicles over and over again in the same part of the skin, and, as is well known, examples of recurring herpes on mucous membrane are common, as, for instance, on the lips and genitals. Sometimes recurrences take place once a month, or even oftener, the eruptions always passing through the usual stages, and undergoing a speedy and spontaneous cure. There is never any peculiarity of health to be made out in explanation of these cases, and they must, I suppose, rank as idiosyncrasies. Homœopathists are welcome to make what use they can of the fact that arsenic will often cure these cases and prevent the recurrence. I have repeatedly seen herpes of this kind remain in abeyance for many months while the patient was taking arsenic, and show itself again when the drug was suspended. I have seen one case which to some extent offers an exception to some of the statements which I have just made, inasmuch as the patient was liable repeatedly to an eruption from arsenic. The eruption always came soon after beginning the remedy, and he was well accustomed to its use. The patient is a gentleman now near to sixty, who has suffered from psoriasis most of his life, and for whom in early life Sir Benjamin Brodie prescribed arsenic. He has often taken it since, and its usual effect is as stated. On one occasion he took it in order to show me the character of the eruption produced. It had been called "eczema," and, although it certainly had the local features of an erythematous eczema, yet it occurred, like herpes, unsymmetrically on one arm in large patches, which disappeared spontaneously after a few days.

LECTURE III.

Mr. President and Gentlemen,—I hope I have made it sufficiently clear that I am not purposing to trouble you with any list of idiosyncrasies. As well for your relief as my own exculpation, it is perhaps desirable that I should again make this statement. What I said about egg-poisoning in my last lecture was intended to suffice as an illustration of what is possible, indeed I would suggest not infrequent, in reference to a whole group of food-idiosyncrasies. The same remark applies to the somewhat detailed discussion on the susceptibilities in reference to tobacco. We are engaged in the examination of the laws of idiosyncrasy, and not in any attempt to record exhaustively its facts. I shall bring before you no more narratives of cases or statements as to facts than may seem absolutely necessary to illustrate the general laws to which we refer. In Monday's lecture we glanced briefly at certain peculiarities of structure which are sometimes met with in external parts which are both congenital and hereditary. For these I proposed the name of structural idiosyncrasies, and asked that we should apply the knowledge that we can easily gain respecting them to those which are much more obscure, from the fact that they are betrayed only by derangement of function.

I next alluded to certain forms of inflammatory disease not present at birth, and in most cases not commencing until a considerable period after it, but concerning which the general facts suggest that they must be due to some inborn peculiarity of the structure implicated. Lastly, I adverted to examples of complicated or secondary idiosyncrasy in which the individual peculiarity is not displayed immediately on the application of its exciting cause, but waits, as it were, for the cooperation of other influences. We found one of our best illustrations of this in the chronic poisoning, denoted chiefly by amblyopia, to which smokers are in exceptionable instances

liable. I concluded my lecture by a brief allusion to idiosyncrasies in reference to arsenic, and was obliged by want of time to defer till to-day what I have to bring before you on the important subject of the iodides and similar salts. I shall be compelled to omit altogether what I had prepared in reference to belladonna, opium, and certain other drugs, an omission which I shall regret the less because, as just said, I am seeking only for illustrations of law, and of these perhaps we shall have enough.

The iodides and bromides offer us, indeed, such excellent and various illustrations of the laws of idiosyncrasy that I am almost tempted to wish that I had excluded all others, and thus secured more time for the consideration of them. The modes in which these salts can produce disagreement are exceedingly varied, and concern very different parts of the system, while many of them are displayed by the skin in a manner which permits of their easy identification and examination. Not even the syphilitic virus itself is capable of producing a greater multiciplicity of pathological changes in the integument. Now it is a hæmorrhage, now a thrombosis, now an erythema, now a bulla; the commonest of all forms is an acne, but in addition to it and those which I have named we may have at the same time pustules, button-like tubercles, and in aggravated cases enormous soft tuberous growths.

If time had permitted me I should have taken occasion to advert also to a topic of much importance to us in operative practice, and should have suggested that in a considerable number of the accidents with anæsthetics it is idiosyncrasy which we encounter. Many of the deaths from chloroform occur to persons apparently in perfect health, and when only small quantities have been given and with every possible precaution. Such cases ought probably to be placed side by side with those in which individual susceptibility becomes unexpectedly revealed to us in reference to such drugs as opium, belladonna, and the like. We waste our labor when we search for proof of heart disease, or some flaw in the apparatus, or some want of care in the administration. The last patient in whom, under my own care, we came near to a fatal event with chloroform, was a man at Moorfields, in whose case extraction of cataract was about to be performed. He would certainly have died but for the vigorous use of artificial res-

piration and the nitrite of amyl. In discussing the case afterwards I was reminded by our house-surgeon that three years before, when the other eye was operated on, the same man had caused us alarm by precisely similar symptoms. The occurrence had unfortunately been forgotten. It is probable that there are persons in whom, owing to peculiarity of nerve organization, and not in the least to anything which we can recognize as ill health, the inhalation of chloroform will always cause an extreme depression of the heart's action. In such, if the precaution of giving beforehand a dose of opium, alcohol, or ether, be omitted, there is the utmost risk of a fatal event. Probably each anæsthetic has its related conditions of idiosyncrasy.

I have passed over also another subject, owing to want of time, which has considerable surgical interest. It is the influence of inherited structural peculiarities in favoring the occurrence of lesions which at first sight suggest no suspicion of such origin. Examples we have of this in the easy occurrence of dislocation, owing to peculiarity in joint formation; and the proneness to intussusception of the bowels, owing to the cæcum and ascending colon being provided with a mesentery. I have several times known the tendency to intussusception show itself in several members of the same family, and in one of the most marked instances in which several of the children had died of it in succession the condition referred to was found at the autopsy of one of them.

I now turn to the subject of the idiosyncrasies in reference to the iodides and bromides. It seems probable that the difference in form which the inflammation of the skin assumes is dependent upon the peculiarities of the individual, for if the patient has shown a tendency to an unusual development of the iodide rash, on one occasion, and the same salt be given to him on another, even after a long interval of time, it will produce exactly the same effect. This I have witnessed repeatedly. Idiosyncrasies as regards the iodide are not manifested solely by the skin, are perhaps not primary in it, and are seldom confined to it. Congestions, with excessive secretion, of certain tracts of mucous membrane, are of yet more frequent occurrence than are skin rashes, but they differ from the latter in that they are, in a majority of instances, only transitory. An eruption on the skin, once developed by the

iodide, persists—and indeed becomes increased—so long as the drug is given; sometimes, even after it has been suspended. The iodide coryza, as it is called, on the contrary, seldom lasts more than a few days; or if it becomes chronic, always subsides into a slight affair. Thus the one would appear to imply idiosyncrasy in a far less degree than the other, and this suspicion is borne out by the observation that in those who suffer from any of the more serious forms of skin eruptions, there are usually other evidences that the drug is producing injurious effects. The tone of the nervous system is always lowered by it, and sometimes to an alarming extent. There is, perhaps, no drug that can be mentioned respecting which idiosyncrasy is so common and variations in its degree so great. I have repeatedly seen doses of only half a grain produce, in the course of a couple of days, definite symptoms of poisoning; and, on the other hand, I have known a patient swallow an ounce and a half a day of the best Apothecaries' Hall iodide for a week together without any special effect, except a feeling of lassitude and want of tone. It is also very remarkable how, in a large majority of cases in which definite and peculiar susceptibility is at first manifested, tolerance may subsequently be attained, and doses of ten, twenty, thirty times the amount given without obvious effect. Probably there is no drug respecting which the assertion can be more easily demonstrated, that it is not the dose, but its effect, which we should regard. It by no means follows that because a patient has an idiosyncrasy against some drug or article of diet, that we ought wholly to abstain from its use. Rather this susceptibility, in the majority of cases, proves that in him minute doses will effect the cure first as efficiently as larger ones in others. I have repeatedly cured tertiary ulcerations of the throat and skin in patients in whom I was assured iodide was a poison in all doses, by giving it in quantities of half, or even a third, of a grain. In the year 1862, M. Bazin, of Paris, an excellent specialist, and at the same time an excellent physician, described a new disease under the name of *Hydroa*. Of this malady he recognized several varieties, one like varicella, one resembling smallpox. On reading M. Bazin's descriptions I was at once struck by the closeness with which they applied to several cases which had been under my own care, and in 1870 I wrote in the "British Medical Journal" a report on "hy-

droa," quoting M. Bazin's descriptions, and recording my own cases together with others supplied to me by my friends. I had previously been to Paris and seen M. Bazin's models. At that time neither of us had any idea of the usual cause of the eruption, nor, I believe, had any of our readers or critics. One of the latter suggested that we had not named it correctly, and that it was only an "urticaria bullosa," but in doing this he gave us no clue to its cause. At this date we all knew of the acne which so commonly results from the iodide, but were not aware that this salt could in connection with idiosyncrasy produce other symptoms so much more formidable. In the session of 1869, Dr. Cholmeley brought before the Clinical Society an example of a remarkable confluent eruption produced by the bromide; several papers had also appeared in Paris on the subject, and subsequently I convinced myself that almost all the examples of the disease to which we had given a new name were really the bullous form of the iodide eruption. From that time to this I have seen but very few examples of "hydroa," except as the consequence of iodides or bromides. It will be seen that we had made no error in observation, but had simply described and named a disease which was new to us, and new to medical literature, but of which at the time we had not discovered the cause. When the cause was found the name became of little importance. As already hinted, however, we have by no means in mentioning the iodide acne, the iodide "hydroa," concluded the list of symptoms due to this drug. Respecting a case which I have to mention in the next group, I shall not be surprised if many remain still in doubt as to whether it ought to be placed in this position. A man came to me at the London Hospital covered with large soft tumors, some of them as big as a child's fist. They occurred chiefly on his face, chest, and limbs. That I may avoid a lengthy description, I will simply refer you to the sketch which hangs on the wall, which is a rough copy from an excellent drawing which I now display. It will be enough to say that the moment I saw it I believed it to be an iodide eruption, and that my diagnosis was based upon the recollection of other cases, unquestionably due to that cause, which I had previously seen. The man had just been discharged from another hospital, and on inquiry I found that during his month's stay in it he had been steadily taking the iodide in increasing doses

the whole time. The eruption was not present in the least before the drug was begun. The patient died within a fortnight of his admission under my care, from exhaustion, apparently due to the extent of surface implicated. The post mortem revealed nothing which threw further light upon the cause of his malady. It seemed probable that he had never had syphilis. He had gone into the hospital on account of another complaint, and when the eruption appeared it was considered to be syphilitic, and instead of suspending the remedy, its dose was increased. The dose was, however, never more than fifteen grains three times a day. To those who are still inclined to doubt whether this terrible eruption was really due to the iodide—and I admit I have no right to be surprised if the number comprises all my audience—I would put the question, What else could it be? The microscope showed in the tubers only the results of common inflammation, and there was nothing in the least suggestive of malignancy. Above all, I would ask that a careful comparison be made with the other drawings from another case which I have placed by its side. It will be seen that the two closely resemble each other, and differ only in the greater severity of the one I have just described. In all essential features of the eruption they are exactly alike. Now there is not room for the slightest doubt as to the cause of the eruption in the second case. It was produced by the bromide of potassium, and it occurred in connection with that drug twice to the same child. I may here remark that I know of no difference between the eruption due to iodides and those due to bromides. The same variety occurs, I think, in both, and the general laws as to idiosyncrasy are the same. The iodide, however, depresses the system far more than the bromide. The eruptions produced by bromides are, I think, attended by less constitutional disturbance, even when locally very severe, than are those due to iodides. A case well illustrating this came under my notice a few weeks ago. I was asked by a medical friend to see an infant in whose case the diagnosis had first been varicella, and next smallpox. Complete isolation had been enforced, but as the eruption had steadily got worse, and the child now at the end of a month remained perfectly well as to health, all had become convinced that there was a mistake. I have mentioned the names which had been given to the eruption as the best

means of suggesting the appearances it at first assumed, and I may add that the surgeon who attended the case was an experienced and sagacious man. The infant, when I saw it, was fat and smiling, but with its face and all four extremities absolutely covered with large buttons of most formidable appearance. Many of them had scabs, but none of them had ulcerated much. At first I was told that the eruption was present before a medical man was consulted, and before any medicine had been given, but on pressing for accurate dates, I found that my suspicion was correct, and that the surgeon was first consulted for a slight feverish cold, for which he prescribed small doses of bromide of potassium, and that the rash did not begin to appear till three days later. No suspicion having been entertained, the bromide had been continued until the day of my visit. My friend told me that he was very fond of the bromide for children, and had given it in thousands of cases, but had never before seen any eruption produced. In looking back on the experience of former years, I recollect several cases under my own care, and that of other surgeons, in whom I think there is great reason to suspect that persistence in the iodide caused death. They were cases in which an eruption which was probably due to it alone was mistaken for a specific one, and the drug pushed still further. In the report which I published in the Clinical Society's "Transactions" I have published two cases in which our eyes were opened only just in time. They were all cases in which the salt had been continued for some weeks. It may be possible, however, for fatal poisoning to occur in connection with the first few doses. In the case of a man admitted into the London Hospital some years ago, only two or three doses had been taken, and an eruption which looked like hæmorrhagic variola had been produced, together with such an amount of swelling about the neck and throat that nothing but the prompt performance of tracheotomy could have averted immediate death. The facts respecting this case were published by my colleague, Dr. Stephen Mackenzie, and the same indefatigable observer has also placed upon record the most extraordinary example of iodide poisoning with which I am acquainted. In this instance, an infant, aged five months, died of iodic purpura after a single dose of only two grains and a half.

The domain of idiosyncrasy in respect to Specific Fevers is exceedingly important as regards both the physician and the surgeon, and I shall make no attempt to distinguish arbitrarily between their interest in this matter. That which the surgeon is familiar with in the case of syphilis, and those remote and exceptional sequelæ of measles, scarlatina and smallpox which come under his care, may be used to throw light upon the facts which fall under the observation of the physician in the earlier stages of these latter maladies. There is probably no good reason for believing that the specific animal poisons can vary in their intensity beyond certain narrow limits. Different epidemics of scarlet fever and smallpox do unquestionably vary somewhat, but after all, the limits of deviation from average intensity observed in different epidemics are as nothing compared with what we witness in different individuals attacked in the same epidemic and apparently under like circumstances. In the latter case we see constantly that it is possible for two individuals infected from the same source and with the same virus to show, the one an eruption consisting of only a few spots almost unattended by fever, while the other developes a confluent or even hæmorrhagic exanthem, which will prove fatal in a few days. Is it possible to give any explanation of these individual differences, except by attributing them to individual peculiarities, and when these peculiarities arise to an extreme height, can we name them more conveniently than as idiosyncrasies? I will endeavor to illustrate the subject by facts which have come under my own personal cognizance. The portraits which I produce exhibit a gangrenous and ulcerative eruption which occurs in connection with varicella. They are, in fact, a peculiar form of varicella in which the eruption tends to persist and the individual vesicles ulcerate or become gangrenous. The evidence upon which I venture this unqualified assertion is, I think, conclusive, for this eruption has been observed repeatedly, with the history that in the first instance it was supposed to be chicken pox, and while chicken-pox was in the family; and in a few yet more definite cases, the surgeon who identified the gangrenous case was the witness at the same time of varicella in its ordinary mild form in the patient's brothers and sisters. The facts have fallen under the observation not of myself alone, but of many others, and they receive important incidental cor-

roboration from several narratives published long ago, and without full perception of the interpretation of the facts. My present object is to cite them simply in proof of the possible influence of idiosyncrasy in modifying the course of an exanthem. The case to which the portrait which I next show belongs, was that of an infant to all appearance in perfect health, who had several brothers and sisters, all healthy, who had all been vaccinated at the usual time with the usual results. In this child, however, vaccination was followed on the seventh day by a general eruption on the skin, which on the tenth day looked like ordinary smallpox, which subsequently became gangrenous, and caused death at the end of a fortnight. The state of the child's skin at the time of its death is well shown in the portraits.[1] It will be seen to be covered by spots and patches of gangrene, the sphacelus involving the whole thickness of the skin. There is no form of variola known which in the least resembles this condition, and none will suggest, I think, that diagnosis. On the other hand, there is a well-known eruption, usually slight and mild, but occasionally very definite, which occurs after vaccination, to which the term vaccinia exanthem is appropriate. My suggestion is that this eruption bears the same relation to the ordinary mild vaccinia rash which gangrenous varicella does to the common type of chicken-pox, and that its exceptional severity was due to individual idiosyncrasy.

I show next another portrait from a similar case which was observed by Mr. William Stokes in Dublin, to whose kindness I am indebted for the portrait. The general facts were similar to those in my own case, with the difference that the eruption occurred a day or two earlier after vaccination, that the patches of gangrene were more irregular and more superficial, and that the child survived. I do not know that any other examples of gangrenous vaccinia have as yet been published, but I have no doubt that such will in the future be observed. I have now related some extreme instances illustrating the influence of idiosyncrasy in causing severity of exanthems which are usually very mild. Probably there are quite as striking examples of the converse, instances in which the

[1] One of these is copied to illustrate my paper on this subject in this year's volume of the "Medico-Chirurgical Transactions."

specific animal poisons pass through the system and produce little or no obvious effect. It may be that these are much more common, and that they go far to explain some of the great apparent irregularities in the course of the exanthemata. We often meet with individuals who tell us, for instance, that they have never had scarlet fever or measles, although they were exposed in childhood at the same time that their brothers and sisters suffered; and we often see these diseases go through a family and leave one or more children apparently untouched. Still oftener will it happen that one or several individuals under such circumstances will show only a very slight febrile ailment, without any of the more characteristic symptoms of the disease, while others suffer severely.

It has happened to me recently to witness a family epidemic of scarlatina which remarkably illustrates what I wish to say. In mentioning its details, let it not be supposed that I think that it illustrates anything unusual; on the contrary, I believe that similar occurrences fall very frequently within the experience of those engaged in general practice.

My facts are briefly these: a child was affected with sore-throat and feverishness, but had no rash whatever, and beyond a slight fur, no change in the condition of the tongue. She was well in a day or two, and nothing subsequently occurred to her. Four days later another child sickened with exactly similar symptoms, but more marked, and in her the usual rash of scarlatina soon appeared; and subsequently a little boy went through the same course of events. Both of these observed precisely the same periods as regards the progress of the disease; both had nose-bleeding on the same day, followed by rheumatism beginning in the same joints, the wrists, and both had great swelling of the cervical lymphatic glands. Subsequently an older sister, who was believed to have had it some years ago, went through a rather sharp attack. Thus, I take it, there can be no doubt that the disease in this instance was scarlet fever: but to prevent any question on the score of diagnosis I may add that one of the patients was seen by Dr. Gee.

It is to what I have next to state that the chief interest attaches. The child who was the first ill, and who had but a day's sore-throat, no tongue affection, no rash, no peeling, was subsequently most fully exposed to the risk of infection, and

did not take it, conclusively proving, I think, that the trivial illness she experienced was the fully developed malady so far as her idiosyncrasy permitted it to show itself. But I have other facts yet more curious. Almost the whole family, and it was a large one, suffered one after the other, during the two or three weeks that the disease was in the house, from sore-throats and a day or two of feverishness. Several of them had never had scarlet fever before, but as to some others, it was doubtful. In all, the cervical lymphatics swelled more or less, but in no instance was there the slightest peeling or any sort of sequela. I have yet to add that, when the first child had sore-throat, I was at once told that the family of a cottager living at a short distance from the house had just been suffering from similar throats. This cottager was the milkman, and there had also been personal communication between the two houses. On inquiring at this cottage, I found that the father, mother, and two grown-up daughters had all in succession had sore throats, attended for a day or two with rather sharp febrile illness, but in no single instance had any rash been observed, nor had any peeling of the skin followed. They were not known to have had scarlet fever on any former occasion, and laughed at the suggestion that what they had now had was it. It may be that after all it was not, but the dates fitted well with the possibility that the first of the children affected had got the contagion from this source. The inference which I wish to draw from such narratives as this, is that it is possible for the individual peculiarity of patients —a peculiarity which may be hereditary and may affect many individuals in the same family—to so far modify and minify the course of an exanthematic fever as to make its recognition quite impossible, and that we ought to seek for the explanation of these remarkable differences, amounting in many instances to almost total suppression, not in variableness in the degree of epidemic virulence, nor in the hygienic surroundings, nor in anything which can properly be called the state of health of the patient, but in that of which we can give no other explanation than that it must rank as an idiosyncrasy.

It is needless to point out what a pitfall of fallacy is here opened for the feet of the investigator. How easily may we find ourselves attributing to influences which were wholly inoperative, results which must simply be put aside as those

which we ought to have expected under the known laws of idiosyncrasy. I will leave for the present the examination of those laws as they influence the course of a certain other specific fever. This is the time at which I ought properly to mention the facts which, in the case of the protracted fever known as syphilis, illustrate its extreme inequality of incidence in different persons. I must not, however, enter into any details now, and I leave them aside the more willingly because the facts to which I refer are matters of universal knowledge. We all know how differently chancres behave in different persons; how they may become phagedænic or sloughing without our being able to assign any cause for the peculiarity. We know, also, that the syphilitic rash in many cases is wholly omitted, together with the rest of the train of secondary phenomena. We know also how, when secondary symptoms do appear, how infinitely variable they may be in form and in severity. A roseola, a lichen, a psoriasis, a rupia, an eruption indistinguishable from variola—such are a few of the forms which we frequently see. Impressed by these startling differences, good observers have tried to make out that there are different kinds of virus, but all the facts are in opposition to such hypotheses. I must content myself by suggesting that they are due to inherent differences in the individuals who receive the virus, and must now pass on to other topics.

Let me next remark that, not only is the sphere of individual peculiarity almost unbounded in its power of modifying the force of the primary outbreak of an exanthem, but that it exercises a great influence in determining who shall and who shall not, suffer from complications and sequelæ. Under this latter term I am alluding rather to what may be called accidental sequelæ; the inflammations of various organs and parts which occur exceptionally and at some little distance of time, and which often brings the patient under the care of the surgeon. The peeling of the skin, and possibly also the nephritic desquamation which follows scarlatina, are sometimes classed as sequelæ, but are really parts of the primary disease. As I think my narrative has conclusively shown, peeling of the skin is not a sequel of scarlet fever *per se*, but of one of the symptoms of scarlet fever, namely, of *dermatitis;* to which it is always proportional, and of which it is the necessary consequence. Inflammations of the ears, and of the bones or joints,

stand, however, in a different category, and so does the ophthalmia tarsi, which often follows measles, and the prurigiuous affections of the skin which are not infrequent after both vaccinia and varicella. When these events happen, they occur probably not by any means as necessary parts of the disease, but rather as revealing idiosynerasy in the individual. Inflammations of the ear and allied affections may possibly in some instances reveal diathesis rather than idiosynerasy. That is, it may be that they occur because the patient is distinctly scrofulous, or the subject of some other form of recognized ill-health. Even as regards them, however, I much doubt whether this is always true, and respecting the affections of the skin to which I have referred, I am sure that they often occur to those who are in good health, and that they are proof of idiosynerasy only.

Differences in the degree of irritability of the skin are common, and may proceed to great length. Flea-bites, woollen clothing, nettle-stings, and the like, produce on different persons extremely different results. Urticaria is a form of dermatitis of which probably but few persons are susceptible, and in those in whom it occurs it demonstrates or reveals this susceptibility and nothing more. The patient who gets nettle-rash whenever he eats lobster may yet be able to digest lobster with as little inconvenience as other people. It is his skin, or perhaps the nerves of his skin, in which the susceptibility alone lies. In this suggestion rests, so far as I can see, the real explanation of the maladies which have been grouped together under the name of *Prurigo*. There is no one disease to which that name is applicable. What we witness is the power of various causes of local irritation to provoke prurigiuous dermatitis in those in whom idiosyncratic susceptibility exists. Now it is the presence of pediculi which is the starting-point; in other cases of fleas; in yet others the occurrence of an exanthem, such as varicella; while in all, the morbid condition, once initiated, is kept up by the patient's unwise efforts to relieve it, and by the mere fact of its having got possession. I repeat, there is no such disease as "Prurigo," a malady which has been described by a high authority as if it were self-existent, and alike causeless and cureless; but there are plenty of persons born with that peculiar irritability

of skin in which a variety of causes may evoke the symptoms to which that name has been given.

We may probably, with much confidence, place diphtheria and erysipelas side by side as diseases,—or rather type forms of the inflammatory process,—which obey parallel laws. Probably no human being is exempt from the liability to them, but at the same time it seems certain that the degree of proneness varies very much in different individuals, is persistent through life, prevails in families, and is matter of inheritance. Thus, then, we assert for both the existence not unfrequently of a sort of constitutional predisposition to which the term diathesis, or even in some instances, that of idiosyncrasy, is applicable. Both may become contagious, and of both exposure to direct contagion is probably by far the most efficient mode of production. Many persons will take them by contagion in whom other causes would have proved abortive. But both are capable of spontaneous origin or, to speak more correctly, may be produced by exposure to certain non-specific influences, such as the ordinary causes of catarrh, injuries, sewer gas, and some others. It is most important that all who value accurate classification should deny both as regards erysipelas and diphtheria their right to rank with those fevers which are due to specific animal poisons. With these, as it seems to me, neither of them has any real affinities. In both, I repeat, that with which we have to deal is a personal and inherited peculiarity, giving proclivity, when certain exciting causes are brought to bear, to peculiar forms of inflammatory action. In both the disease is probably local at its origin; in both it spreads locally by the contagion of continuity of tissue, and in both constitutional symptoms result which are in some ratio with the extent and severity of the local action. Neither of them in the least protects the individual from future attacks; indeed, and although in each single attacks are common enough, yet it is generally acknowledged that those who have suffered once are more prone than others to suffer again, and in both there are not infrequent instances of proclivity lasting through many years.

In erysipelas the essential feature is a spreading inflammation of lymphatic spaces in the skin producing great œdema, and usually great enlargement of blood-vessels. In diphtheria we have a spreading inflammation of a mucous membrane,

attended by œdema, dilatation of blood-vessels, and the formation, in greater or less quantity, of a fibrinous pellicle. Although I mention skin as the seat of the one and mucous membrane of the other, let it be distinctly understood that these are only the most usual sites; both may attack cellular tissue or wounds, and each may occasionally affect the usual territory of the other.

There may be some doubt as to how, when these inflammations affect repeatedly the same individual, the fact should be explained. It may be that one attack leaves a really increased proclivity to a second, or it may be that the first simply revealed a proclivity which had existed all along, and of which the later ones are merely the manifestations without addition. Probably both explanations are true.

It is, I presume, not necessary that I should produce before this audience any citation of evidence in proof that a personal liability to erysipelas and diphtheria may be witnessed. All are familiar with them. It is probable that there are some slightly marked affinities with the diseases just named and such maladies as carbuncle, boils, and acne. Respecting all these we have the same questions to ask, how far are they dependent upon constitutional causes? and how far upon those which are local? We may take it as certain that in all there is a double causation, and our task is to assign in each instance the relative share of each. In the first place we may say that the liability to acne, to boils, to carbuncles, is often a family matter, and is seen to occur with unusual frequency in relatives. It is often also a personal matter, as is proved by its persistence or recurrence at various periods of life. Further, the association of these maladies with more or less temporary disturbances of health, with diabetic dyspepsia, with constipation and defective tone, is a matter of constant observation.

Whoever has reflected, however, as to the real nature of carbuncular inflammation, will, I think, see reason to believe that its peculiarities are to a large extent local ones. Respecting both boils and carbuncles, it is the fact that the most efficient measures of treatment are those which appeal to the local condition. This is true of all the different measures in repute, however dissimilar at first sight they may appear. Some have for their object the protection of the inflamed area

from further irritation, as when we cover up a boil or commencing carbuncle with leather plaster, others the subdual of the inflammation by means of cold and the like, as when we use an ice-bladder or a strong spirit lotion. Nor do those who adopt a time-honored practice of an early free incision depart from this principle, for their object is still the mitigation of local inflammation by the relief of tension, and by permitting the escape of contaminating matters. From acne, impetigo, and ecthyma to boils is in many cases a matter of degree, and that there is little or no real distinction between a large boil and a small carbuncle, all will, I think, admit. The age of the patient, and his special diathetic condition at the time, their size, the influence of different modes of local treatment, are the conditions which determine the final result. If a boil occur in an elderly person, on the nape of the neck, where it is likely to be irritated by the shirt-collar, and especially if, instead of being symmetrically protected from the first, it be further bullied by premature squeezing and the like, it is very likely to pass on into a carbuncle. I claim the strong testimony which has been borne by Sir James Paget and others to the efficiency of simply protective measures in preventing the development of small carbuncles, and obviating the supposed necessity for incision, as proof that local spreading is, in the main, due to local causes, and has no necessary connection with the general health. In other words, it is not a thing which is inevitable. On the other hand, we know of no internal remedy which possesses any marked power in arresting carbuncular inflammation.

If now we ask, In what does the peculiarity of carbuncular inflammation consist? in what does a carbuncle differ from a boil? I should be inclined to reply that it is solely in this tendency to spread. The spreading is effected by contagion of continuity, and it has certain marked resemblances to what we observe in erysipelas. A carbuncle might almost be defined to be *an erysipelatous boil* with the proviso that the expression is not intended to imply identity of inflammatory type, but only close similarity. Throughout its whole course, and however extensive it may be, a carbuncle, in combination with its erysipelatous method of spreading, contains the characteristics of the furuncular process. Its secretions and its core, or slough, are exactly like those of a boil, excepting that

they are much more abundant. In a general way there appears to be a natural tendency, independently of treatment, to the arrest of the process, and this is not generally observed in erysipelas. In other words, erysipelatous inflammation is more intensely infective than is carbuncular. I must, however, qualify even this admission of difference by reminding you, that carbuncular inflammation has such an injurious influence on health, that in all cases in which its spread continues in spite of treatment the patient quickly dies. Thus many cases occur in which no proof is given of tendency to arrest. It may easily be the fact that in some states of system, and some types of carbuncle, there is as little tendency to arrest as there is in phlegmonous erysipelas.

I fear I have wandered rather far from the subject of diathesis, but my argument, if I have succeeded in making it clear, is this: that there exists a certain state of tissue and constitution, different in each instance, which gives proclivity to diphtheria, to erysipelas, to acne, to boils, and to carbuncle, and that while the importance, the almost paramount importance in many instances, of local influences in exciting and aggravating is kept in mind, the diathesis in the background must not be forgotten. Further I have argued that carbuncle is the result of a sort of combination of the erysipelatous and furuncular types of inflammation. I feel sure that these views as to pathology will be found to fit well with therapeutics.

Tetanus is a malady so rare, that if we admit its possible spontaneous production without regard to previously existing proclivity, we must not expect to find many instances in proof that the latter does sometimes exist. Yet there are such, and possibly, if looked for, more than we might suppose. The influence of race is proved by the great liability both of infants and adults among the negroes, and also of certain animals. I have met with a few cases in English practice which appeared to imply that there might be an inherited proclivity to tetanus. A man who looked quite well walked into my room as an out patient at the Metropolitan Free Hospital and gave me his own diagnosis by declaring "I am going to have lockjaw." I found that he had recently had a slight wound on one hand, and that he was beginning to feel some stiffness of his jaws. His symptoms, however, were exceedingly slight, and his anxiety was caused by the fact that his father had died of

tetanus. The poor fellow's foreboding was rapidly realized, and he died within a week.

Here, for the present, Mr. President, I must take leave of the subject of idiosyncrasy. I have endeavored to claim for these forms of individual peculiarity a much wider sphere of influence than is usually accorded to them. It is necessary, I am well aware, that one should exercise some scepticism in accepting doctrines of the kind which I have brought before you. To fall back on the suggestion of an idiosyncrasy is so easy that it may easily become the resort of intellectual sloth. We must not, however, be deterred by this consideration from the acceptance of such doctrines if they are true. That they are so within certain limits I cannot doubt, and the problem before us is to find those limits. If we fail to recognize, or if we forget, the influences of idiosyncrasy, we shall not only waste much time in our processes of clinical research, but we shall be in constant danger of coming to wrong conclusions by declining to accept evidence as to cause which is really sound, and of adopting false principles in reference to treatment. In every example of a curious and unexpected form of disease, our minds should, I think, first ask the question, "How much of this may possibly be due to the individual peculiarities of its subject?" We are often on a wrong track if we seek to make external influences explain the whole.

Let me add, in conclusion, and it seems to me of great practical moment, that the individual peculiarities of all patients should be carefully studied, and that they should themselves be made intelligently acquainted with them. There are few of us without our idiosyncrasies, and their variety is innumerable. If it should become the custom for parents to record some sort of life-history of their children in permanent form from the birth or infancy onwards, noting all the peculiarities in an individual by the aid of medical observation, not only would much be done in the way of preventing subsequent errors in the treatment of disease, but valuable contributions would be made to our knowledge of its real nature. It is not only as regards the prescription of our drugs that a knowledge of our patient's peculiarities becomes important to use in practice. The advice we have to give in respect to places of residence, mode of life, and of general management are often of far more importance than the medicine prescribed. Its wisdom or the

reverse may depend on our knowledge or ignorance of the individual peculiarities, and those peculiarities frequently do not display themselves in any of the existing symptoms, but can be recognized and revealed only by a correctly kept life-history.

LECTURE IV.

Mr. President and Gentlemen,—We turn to-day to a new department of our subject. I have been dealing hitherto with fixed inborn peculiarities which are for the most part beyond our explanation, but in consequence of which disease in individuals may assume very peculiar features. How peculiar and exceptional those features may be I have illustrated by the production of cases of bullous, pruriginous, and even gangrenous varicella, and of two examples of gangrenous vaccinia. I have also reminded you of the great differences in different individuals in the type and severity of syphilis, and I have shown, too, how, not only may the exanthemata sometimes attain most unusual severity, but that not unfrequently all their usual symptoms may seem to be suppressed and the patient may pass through a complete attack scarcely knowing that he has been ill. We have further glanced at the facts which prove that the iodides and bromides, remedies in daily and most frequent use, and for the most part very harmless, may occasionally act as violent poisons. Lastly, I have urged that in many other morbid processes originating in connection with ordinary and known causes, or it may be from local infection, the peculiar constitution of the individual takes an important share as well in increasing the proclivity as in modifying the result. Instances of this I found in such diseases as diphtheria, erysipelas, and carbuncle. Respecting these and the other examples of personal proclivity or immunity which I have ventured to cite, I have maintained the same argument, that they are all independent of everything that is to be recognized in the state of health of the patient, and that they imply that which is conveniently known as idiosyncrasy. Much, indeed almost all, that I have advanced is, I am well aware, by no means novel. I have been dealing with old names and well-established doctrines, and my reason for bringing them before you has been, not so much the hope of

being able to contribute new facts or theories of my own, as the desire to set in better order that floating knowledge which is a general possession. In the lectures which are yet to come I shall restrict myself to the same design. I am going to ask your attention to a great number of topics, to many of which I shall advert with such brevity that it would not be possible for me to enforce original views even if I possessed them. The bond of connection which will associate these various subjects will be the endeavor to discover whether there exist any large groups of states of personal peculiarity giving special proclivity to diseases which can be suitably defined and named. If the reply to this question be in the affirmative—if we see reason for believing that those who become our patients do really differ one from another in respect to definite tendencies, which are of prolonged duration and upon the knowledge of which we can conveniently base not only our prognosis but our treatment, it will next be our duty to examine as to the real nature of those states and the laws under which they came into being and continue to exist. I have dismissed the consideration of temperaments as being when correctly limited an unproductive field of research, but in doing this I expressed a belief that the investigation of the diatheses stood in a very different position. In the one we deal with the peculiarities of race and the results of what may be termed breeding, in the latter we begin much nearer home and investigate the consequences of a variety of influences which are capable either separately or together of producing chronic disease. For, in fact, what we mean by a diathesis is little other than an exceedingly chronic disease. It is a disease or taint which lasts a lifetime, which may be active at times, and latent at times, and which may be handed on to another generation. If we accept as a definition of diathesis that it is *any condition of prolonged peculiarity of health giving proclivity to definite forms of disease,* we must admit at once that it will comprise groups of maladies which are very different in their nature. Of some of these states the causes are very definite and specific, while of others they are much the reverse. Of those which are most definite, such as leprosy and syphilis, it may perhaps almost be doubted whether there is any convenience in calling them diatheses at all. In certain stages when the disease is active there is assuredly no object in

using any other word than the substantive name. It is chiefly when external symptoms are absent for a time in the individual, or when we witness the phenomena of hereditary transmission, that we feel to need the addition of such a word as diathesis. It is in most conditions easy to say of an individual "he has got syphilis," or "he has not got syphilis," or "he is the subject of leprosy;" for the disease in each instance is a definite one, and there is no such thing as a state of physical proclivity to either. Such maladies, however prolonged may be their possible duration, stand in the very different category to scrofula, rheumatism, or catarrh. These latter are diatheses which may vary within the widest limits in the individual, and are so common as to be well-nigh universal. We can scarcely assert of any one that he is free from them, and the question is rather as to estimation of the degree. They are diatheses in the truest sense of the word, and they belong to the whole human family, and possibly, indeed, to all vertebrate animals. The more important questions to be put in reference to them are not, have you got rheumatism, scrofula, catarrh, etc.? but rather, in what degree are you catarrhal, rheumatic, or scrofulous? The degree of susceptibility in each varies exceedingly in different persons, and in many instances rises to such a height that it constitutes a very serious disease. To these, so to speak, universal diatheses I shall have to recur in my last lecture.

In the same sense that we seek to know respecting our patients whether they possess more than usual proclivities to rheumatism and the like, we also inquire respecting various other states. Has he been injured by malaria? Has he been exposed to the causes which produce bronchocele? Has he a tendency to cancer? Is he gouty? Has he any permanent peculiarity of the circulation giving tendency to local disease, or of his blood-vessels causing risk of hæmorrhage? In these and various other directions we see our way to the construction of a host of diatheses of less importance than those we have mentioned only because they are less common. In the present lecture I shall glance at certain general groups of diatheses, arranged according to their causes, and in the two subsequent ones I shall take various special diseases, or isolated symptoms, and examine in respect to each how far it is possible to make use of it as a clue to the diathetic state pro-

ducing it. Our knowledge of many of the diatheses is for the present far too vague to admit of our attempting any satisfactory classification of them, and a further difficulty occurs in the fact that their differences are often very dissimilar in kind. We might suggest a group of those which are transitory and those which are permanent, and others of those which may be acquired, and those which are solely obtained by transmission. It is clear, however, that any such grouping as this would often necessitate our placing the same malady in more than one class. On the whole, I think the simplest plan will be to make for the present a rough classification of the causes of diatheses, a task far easier than that of the diatheses themselves, and following this, I shall bring before you a few examples of each.

I will commence first with diatheses in relation to *climate*. Under the term *malaria* we may include all the various emanations from marshy grounds, swamps, and jungles. As to its exact nature we know nothing, but that, whilst similar in essential qualities, it varies in different localities, both in intensity and character, seems certain. Its effects upon the human constitution may be to produce quickly very severe disease, but, whether acute or otherwise, attacks of arterial spasm attended by visceral congestions are almost constant phenomena. Its effects, whether exposure be continued or otherwise, are always permanent. The man who has once had ague will display through life peculiar susceptibilities. Under all circumstances likely to cause shivering he will show especial tendency to rigor. He will shiver if a catheter be passed, or if he be exposed to cold, or if inflammation is initiated; and it becomes a matter of some practical importance to the operating surgeon to remember that rigors occurring to such patients are not so serious in their import as in others. They are retrospective symptoms, and reveal the fact that those to whom they occur have at some former period come under the influence of malaria. One attack of malarial fever by no means prevents another, and although subsequent attacks are usually less severe than the first, yet the effects of the poison are distinctly cumulative, and the limits within which acclimatization can secure immunity are probably much more narrow than has been supposed. It is easy to see that a poison which can be so persistent in its action and of which the effects, even in mild cases, are so well nigh permanent,

must be capable of producing that state of body which we name diatheses. The malarial diatheses is, indeed, a well-marked one, and it exists in greater or less degree in all who have ever come under the influence of its cause. It is probably in some degree hereditary, the inheritance being, we may suppose, in ratio with the severity and length of duration of the disease in the parent. Inasmuch as the offspring of those who have suffered are usually born under conditions of continued exposure to its cause, it is difficult in them to discriminate between what is inherited and what is acquired. So great, however, is the combined influence of the two that a fearful state of physical degradation may be thus produced, and in this the inhabitants of a whole district may be involved. Nor is the physical health alone affected; the nervous system is especially involved and the mental and moral faculties are largely influenced. When we remember how permanent in hereditary transmission such influences become, we can easily understand that the malarial diathesis has, in many instances, had a large share in controlling the destiny of a nation or damaging the character of a race. This diathesis can easily mix itself with any other, and in London practice we encounter it very frequently in association with that of syphilis, and occasionally both with it and that of alcoholism. I am speaking, of course, not of London residents, but of those who have lived abroad.

A climatic diathesis which must be placed side by side with that due to malaria is the one which results in bronchocele and cretinism. Here, again, we are ignorant of the precise cause, but we know that it appertains to certain local telluric conditions, and especially to mountains and valleys, just as we know of ague that it belongs to marshes. The cause of this diathesis is much more slow in its effects than is malaria. Far longer residence in the locality is required, and for its worst effects it appears to be essential that there shall have been transmission through several generations. It appears to persist with considerable tenacity in families which have once suffered from it. Like malaria, it degrades the entire man, and whenever prevalent produces certain deterioration of race. This diathesis may perhaps be most conveniently named, from its most conspicuous symptom, *the bronchocele diathesis.* It is absurd in the case of this endemic disease to speak of

bronchocele only, since the general health is always at the same time involved. At the risk of being accused of repetition, I must here again insist upon the features of distinction between diathesis due to food and those to be assigned to climate. The latter are distinctly restricted and endemic; the others not so. The latter, when severe, affect all immigrants who come within their range of influence, without regard to health, position, or habits, and under certain circumstances leave scarcely any exempt. The diet-diathesis, on the contrary, as illustrated by leprosy and the like, affect immigrants only very seldom, and with great apparent capriciousness, taking one and leaving a thousand untouched.

These diet-diatheses constitute a group of great importance. They are persistent constitutional conditions—sometimes hereditary, at others not so—which have their origin in connection with food. Of them by far the most important for us, as English surgeons, is gout. Perhaps I ought to have assigned the foremost place to scrofula, and I should, indeed, have done so, but that it probably acknowledges a mixed causation. In many gouty patients the sum total of the diathesis is, as regards its causes, mixed. There may be susceptibility to weather, and to influences on the nervous system, as well as to articles of food, but these we can separate from what we mean by gout itself; and so far as this is concerned I believe we must all acknowledge that it is a question of diet. About the intermediate steps of causation there may be room for much discussion and difference of opinion. But I suspect that no one will decline to accept the suggestion that had mankind continued to be vegetable-feeders, and never known the use of wine or beer, we should have had no experience of gout. If this be granted it is all I ask, for it is to be freely admitted—nay, expressly asserted—that such a thing as uncomplicated diet-gout is now scarcely to be met with. If, however, we can succeed in any degree in separating its complications from itself, we shall find in gout the best type from which to study the laws of a diet diathesis. In my own mind, leprosy stands next to gout in the certainty that it is due to food, but I cannot speak as to this theory of its origin as being yet commonly admitted.

Certain general statements may be expected to be found true concerning all diatheses which are due to food. They

ought to be the same or nearly the same, in all countries where the same diet is used, and they ought to cease where the diet is wholly changed, and to undergo modification, or to become rare, when it is modified. To some extent they ought to be curable by abstention from the articles of food supposed to be their cause; but we must not push this too far, since many constitutional conditions, when once established, may persist, or even become hereditary, after the removal of their true cause. I scarcely need recapitulate the facts respecting gout which prove its association with dietetic habits. They are too well known. It may be well, however, that we should be reminded that the diathesis, when once established, becomes by inheritance remarkably persistent, and that it is unquestionably the parent, when so transmitted, of many very peculiar maladies of which the affiliation might easily have been overlooked. I went into some detail in one of a former series of Lectures in describing a peculiar form of destructive inflammation of the eyeball, a chronic and almost painless irido-cyclitis—which occurs only in those who inherit gout, and I shall not now say more respecting this disease than that I have, since my former lecture, seen some remarkable cases which supported the views then propounded, and none at all which were exceptional to them. There are several other less definite, and still less common forms of eye disease which stand, I believe, in the same relation to gout, and with them I would ask to be permitted to place (and I speak not without the justification of carefully-collected evidence), a large number of cases of crippling rheumatism, almost all those which are known as spondylitus deformans, a great majority of the cases of gonorrhœal rheumatism, most of the severe forms of neuralgia occurring to young persons, and many peculiar liabilities to hæmorrhage. It seems, indeed, under the ordinary customs of English society, very difficult, even after several generations of strict temperance, to get rid of the gouty diathesis, and some facts would dispose us to the belief that, even after it has ceased, perhaps, during several generations, to manifest itself in the typical form of joint disease, its effects may still be encountered in predisposing to disease of blood-vessels, of the kidney, and of the nervous system.

The facts regarding leprosy are probably somewhat different, but some allowance must perhaps be made for the cir-

cumstance that we have not as yet had an opportunity of examining them so critically. It would appear to be far easier to produce leprosy *de novo* than it is to produce gout, and it appears also, as might be expected from this fact, to die out of the system and out of the race much more quickly than does gout. Probably it is associated with some much more definitely specialized dietetic poison than that which causes gout. For, if the hypothesis which I advocated before you two years ago, and in which I believe with increasing firmness, be correct, it is certain that the leprous poison is capable of considerable concentration under favorable circumstances, and may produce its effects in a comparatively short space of time. Many cases might be cited in which children or adults of healthy English families residing for a few years in a leprosy district, and eating only the ordinary food of the place, have become its subjects. Even in these, however, the malady is never rapidly developed. It always comes on slowly, and not unfrequently does not reach its height until possibly several years have elapsed after removal from the place where it was acquired and return to English food. This development of leprosy without possibility of hereditary transmission, and after short periods of residence in dangerous localities, is, I believe, never witnessed in temperate regions, and never excepting where it is well known that unwholesome varieties of fish are met with, and where also the wholesome kinds are liable to rapid decomposition. The fish theory assumes that, under such conditions, the special leprous poison may be taken in very efficient quantities in connection with a very small allowance of fish. It is the quality of the fish, and not its quantity, that we must regard. Next I stop to note that the same fact is observed, though not to the same extent, in the case of the beverages which produce gout. I am especially anxious to draw attention to this statement, because it is almost always forgotten or ignored by those writers who still disbelieve in the fish hypothesis.

As regards my suggestion that the leprous diathesis is not only more easily produced than that of gout, but dies out more quickly when the cause is removed, many interesting facts might be mentioned. Almost all authorities on the disease have laid stress upon its hereditary tendencies, but a great fallacy underlies all their observations in that these

supposed tendencies have been witnessed in districts where the original cause—supposing that cause to have been a poison taken in connection with fish—was still in existence. Thus, it is easily possible that the inherited tendency may have been, at any rate, recruited from time to time by the original poison. The careful observations of Norwegian physicians in the United States have proved that leprosy does not persist in the families of immigrants from the leprous districts of their native land, and have further, I think, made it probable—although I do not know of any special cases that have been published in proof—that even the subjects themselves of leprosy get well after a long residence in their adopted country. I had the pleasure of producing before you, at the time of the lecture to which I have referred, an old lady who had, under my own observation during a period of about twenty years, recovered from leprosy. She had contracted the disease in Barbadoes, and had recovered in England. She is still alive and in good health, and has now had no sign of leprosy for many years. This was the first case of definite recovery from a severe and characteristic form with which, at the time of my lecture, I was acquainted. Since then, however, two other examples of recovery from leprosy—or, at any rate, a cessation of all leprous processes—have come under my observation. The subject of one of these, a distinguished missionary, now an old man, is blind and crippled in all his extremities in consequence of leprosy contracted in Jamaica thirty years ago. He has lived the greater part of this time in Canada, and for many years has been quite free from leprosy manifestations. I did not myself see him when the disease was extant, but the conditions which it has left justify the diagnosis, even if it had not been placed beyond all doubt by the fact that it was made by Dr. Brown Séquard. Probably there are a great many persons living who are examples of the entire cessation of leprosy processes after long periods of residence in healthy districts; but no particular interest appears as yet to have been attracted to the search for them, and as the process of recovery is one which extends over such a long period of time it is not always easy to recover data which place the original diagnosis beyond doubt.

Before leaving the subject of leprosy I must briefly summarize the evidence anew which leads me to place it very con-

fidently among the diet-diatheses. It is the same in all countries, and probably has been so in all ages. It is the same in rich and poor, in hot climates, and in cold climates. It is certainly neither infectious nor contagious: yet it is capable of origination in those who go to reside where it is rife. It slowly gets well in those who leave its haunts and reside elsewhere. It is not possible to mention any climatic condition which is common to all the very varied localities where leprosy is found. Whenever it occurs in a temperate climate it happens to those who are engaged in the fishing trade, and who live, to a very large extent, upon the poorer kinds of fish. Although when it occurs in hot climates it usually observes the same rule, yet it now and then happens to those who eat but little fish. But this is always under circumstances where fish is known to be bad, and where it rapidly decomposes. Finally, in all temperate climates leprosy disappears before advancing civilization, the introduction of agriculture, and the increase of population.

Before we can decide as to whether *Scrofula* should rank as in the main a diathesis which is due to defective food, we have to ask what is meant by the term. In answering this question, I am glad to acknowledge help from the valuable lecture on this subject delivered before us last summer by my colleague, Mr. Travers. The general tendency of modern investigation would seem to be to associate tuberculosis with scrofula, and to teach that both may be, and usually are, the consequences of inflammatory action in predisposed individuals. Much that is known as scrofulous probably never reaches a distinctly tuberculous condition. But the name is still, I submit, appropriately applied if the inflammatory action can be shown to be of that type which often or usually results in the development of tubercle. On the other hand, there are certain cases in which the proclivity to tuberculosis is so strong that it does not wait for the advent of an inflammatory exciting cause, but is produced, as a lymphatic neoplasm, without the occurrence of preceding congestion. In, however, the very large majority of tuberculous and scrofulous cases, a predisposing cause and an exciting cause are both present; the former being an inherited proclivity, the latter an injury, a catarrh, or any influence likely to produce local congestion.

The greater the degree of hereditary proclivity the less is the need for the exciting cause. We may note also that we frequently have to witness in the case of scrofula the influence of what may be called contributory causes, such, for instance, as the occurrence of an exanthem or other acute illness. We have then to examine as to what may be the influences under which a proclivity to inflammations of the scrofulous type may arise, and we shall probably be not much mistaken if we make answer as we should do in the case of rickets, that they are largely due to deficient and unsuitable food; but that, at the same time, it must be admitted that climate, clothing, and weather take each a very considerable share. As regards diet, it is probably a deficiency of fatty matters, such as butter, oil, and the various other forms of animal and vegetable fat, which is influential; and, as regards climate, deficiency of sun and exposure to damp and cold. Scrofula, as we see it, is probably always inherited, but it is often probably largely increased by exposure to the causes hinted at. Possibly there are few practicable dietetic changes which would be more beneficial to our English population, in reference to scrofula, than a large increase in the consumption of butter and other animal fats. The comparative immunity of those who use the fish oils as articles of food, and the prophylactic virtues of cod-liver oil among ourselves, are, I believe, established facts, and their lesson is of considerable importance in reference to the dietetic causes of scrofula. We are enabled at the present time to speak much more definitely as to the diseases which should be classed as scrofulous, and as to their essential connection with the tendency to tuberculosis, than we were some years ago. A considerable number of diseases of the skin, of the bones, of the eye, have been conclusively removed from the scrofulous group, and placed under their proper designations, as cryptogamic in some cases, and syphilitic in others. So far had this gone that I can easily imagine that there may be some who think that I have given too wide a definition of scrofula, when I asserted that it is not always associated with the growth of tubercle. To such critics I will produce the instance of scrofulous ophthalmia, which usually consists of a chronic, slow-to-heal ulceration of the cornea, unquestionably dependent upon a constitutional cause, and often coincident with other scrofulous manifestations. There

are also diseases, I cannot but believe, among the inflammations of joints, which are slow, comparatively painless, in the ordinary sense of the word "scrofulous," and occurring in the relatives of those who are themselves tuberculous, but in which yet it is impossible to prove the presence of tubercle either in the bone or synovial membrane. The frequent and comparatively easy, and often permanent cure of many forms of scrofulous inflammation, is also, I think, another reason for believing that, although tubercle is its ordinary goal, it is by no means always reached. The scrofulous diathesis is indeed very ill-defined, and, in many instances, shades off very gradually into other states of defective organization. How closely, for instance, are many conditions which are called scrofulous associated with those peculiar states of feeble circulation and irritable tissues which give liability to chilblain, swollen lips, and the like affections? Yet these latter are not probably in any strong degree indicative of tendency to tuberculosis.

The liability to *Rickets*, in other words to a derangement of health, of which defective ossification is the chief but by no means the only result, should unquestionably rank as a diathesis. It is one, however, which is usually, though not quite invariably, terminable at a certain period of life. In very rare instances, so rare as to be almost doubtful, it may begin during intrauterine life, but usually its advent is delayed until near the end of lactation, and it reaches its climax, and begins to subside just at the time when the child, hitherto carefully restricted to a very few articles of food, and mainly to milk, is allowed to indulge its tastes, and to have variety. With such facts the first suspicion must certainly be that it is probably dependent on a milk regimen, and in the main no doubt this suspicion is correct. In numberless instances it has been proved that the milk upon which children have become "rickety" was distinctly poor in quality. The advantages in change of regimen are almost always well-marked, and although some experiments on the lower animals have failed in the artificial production of rickets through restricted food, others appear to have succeeded. While, however, we may safely believe that defects in diet are the main cause of rickets, and that they may be effectual in the almost entire absence of others, yet it is probable that others are usually present and contributory. In the discussion on rickets which took place at the Pathological Society two

years ago several speakers drew attention to the fact that the disease is very rare in sunny climates, although infantile inanition from poor food may be common. Mr. Spencer Watson in particular used arguments which made it very probable that free exposure to sunlight and warmth would do much to enable a child improperly fed to yet effect assimilation in such a way as to keep clear of rickets. We may certainly believe it probable that our climate and the narrow, sunless streets of our large towns take their share in the production of what was once known on the Continent as "the English disease." Let me here repudiate emphatically the suggestion which has recently come from Paris, that inherited syphilis is the real cause of rickets. The two diatheses are probably quite distinct, although they may often co-exist, and in other instances may simulate each other. Inherited syphilis,—as the labors of Taylor in New York, M. Parrot in Paris, and Drs. Barlow and Lees among ourselves, have shown us,—may frequently produce swellings about the epiphyses, and a state of general tenderness of the skull due to ostitis, which might be mistaken for rickets.

A word or two must here be said respecting a disease of the osseous system of great rarity, which has been named "Rickets of the Adult." I allude to osteo-malacia, or Mollities ossium. It is probable that maladies having relation to different causes have been confused together under this title. But respecting a certain number of the best-marked cases, there appears good reason to believe that the disease is really a form of rickets, and that the differences observed between the two maladies are chiefly due to the very different condition of the osseous system as regards its development at the time of attack. Trousseau has recorded a case in which osteo-malacia attacked a woman of seventy who had been rickety in childhood, and another case in which this disease was cured rapidly by the use of cod-liver oil and liberal diet. There is a skeleton in the Brighton Museum which was obtained through the zeal of that accomplished physician the late Dr. Ormerod, which is one of the best examples of osteo-malacia that I have ever seen. The man had had innumerable fractures, and partly through faulty union and partly through bending of his bones, had lost more than two feet of his stature. In this instance the man's children were much deformed

by infantile rickets. Although as an ordinary thing the diathesis of rickets, if not fatal, passes away as age advances, and under the influence of judicious dietetic treatment, we may reasonably suspect that there are a few cases in which it does not do so, and that it is quite possible for it to be reproduced or even initiated in adult life. In respect to its rapid subsidence, and usually its complete disappearance when the diet is improved, the rachitic diathesis has a close parallel in *Scurvy*. The latter malady is indeed of such duration that we might hesitate to apply the term diathesis to it. It is for the most part an acute diathetic disease, produced quickly and quickly cured. In saying this, however, we have not said all, for there are cases in which scurvy passes into the chronic form and becomes the source of permanent ill-health. When it does so it may fairly claim to rank with the diatheses, and it is quite possible that, in exceptional instances, some degree of influence from it may be hereditarily transmissible. In scrofula, rickets, and in scurvy, we have examples of diatheses produced by defective food, while in leprosy and gout we illustrate those due to some excess, or rather to something deleterious contained in the food. Close by the side of leprosy I ought to discuss ergotism, pellagra, chronic lead-poisoning, and some others, but time does not permit. Can the specific animal poisons become the producers of permanent diatheses? This question must, I think, be answered in the main in the negative. Unquestionably they may produce conditions of ill-health which persist for a certain time, and may cause various morbid manifestations; but these states are short-lived, and perhaps are more fitly ranked as dyscrasiæ than diatheses. This is true even, I think, of syphilis, the most chronic and most persisting of all specific fevers. Excepting in some very small degree of reduced liability to the influence of the same poison which is to be observed in the offspring of those who have suffered, I doubt whether in any case the influence of a specific fever in a parent is to be traced in the offspring. No state of health which is heritable is ever produced. Some few exceptions to this should perhaps be allowed when smallpox, measles, and the like appear to intensify the diathesis of scrofula, but they are probably of but little importance. The general law certainly is, that a specific animal poison may breed in the blood, and may for the time produce

most violent disturbance of the health of the individual, but its effects cease after a while, and cease completely, and leave the body unmodified with the exception that it is no longer liable to the influence of the same poison. This immunity lasts only during the lifetime of the individual, and cannot be transmitted excepting in an exceedingly slight degree. Even in the individual it is by no means complete or invariable. I am aware that there is an apparent exception to all this in the case of syphilis. I will speak of that directly, and will also say a few words as to the limitation of the law of immunity of the individual. Before we pass to those topics, however, it may be well to ask attention to the strongly-marked differences which are to be observed between the states of health produced by the specific poisons, and those which are due to inflammation from non-specific causes and which come under the law of intensification by habit. In the development of such inflammations as those of erysipelas, diphtheria, elephantiasis, and especially when not due to contagion, the constitution of the individual takes a large share, and the mere fact of their occurrence reveals his previous proclivity. The disease originates, in part from without, but in part also from within. It is not an instance of intrusion, but of development, and peculiarities of blood, tissue, or nervous system, are exactly those which are capable of increase. In the case of the exanthems, however, the body of the sufferer is in the main passive, and is acted upon by a poison which is intruded from without, and to which *nolens volens* his tissues must submit. The occurrence of the exanthem reveals nothing and intensifies nothing. It is from first to last a violence done from without, by an external agent, and when its direct effects are over, the body may be supposed to return in all other respects to its original state. A man who has been put in the stocks is not especially likely to acquire the habit of going to sit there, nor does the man who has been burned, or who has broken his leg, acquire therefrom any tissue-proclivities. His tissues were in no sense consenting parties, and the laws of habit do not come into play. The possibility of second attacks, and the absence of protection to offspring, are facts which indicate that the influence of exanthems is only transitory. As regards the immunity of the individual, conferred by an attack of an exanthem, we may assume that it is neither com-

plete nor universal. Modified attacks may occur repeatedly in the same person, nor are second and fully-developed ones unknown. Thus it is, I believe, a matter of general creed in the profession that, when scarlet fever is in a house, those who have gone through it before are liable to suffer from sore throat without the rash: and that with measles catarrh may in the same way denote a minor degree of protection. The modification of variola by vaccination, and also the limited duration of immunity, are well-known facts. Second attacks even of variola itself may occur.

Remembering the length of time during which the effects of the syphilitic fever may persist, we might perhaps expect that it would prove more constantly protective than the others. But the facts teach us that we must not conjecture, but be content to observe. No one has, I believe, ever categorically denied the possibility of second attacks of syphilis, but the opinion which almost universally prevailed, a few years ago, came very near to this conclusion. That, however, second infections with modified results are tolerably common, and second attacks with full development of all the phenomena, not extremely rare, is, I feel sure, the truth. I have recently had under my care, at one time, three patients in whom it was certain that they were passing through second attacks. In more than one instance the patient has been under my own observation during both attacks. One of those which I have just referred to is a very remarkable case, on account of severity of both attacks. The patient, now a surgeon, of about forty-five years of age, had syphilis when a student. It was attended by a free rash, and was followed by various sequelæ, which he did not get rid of for three years. Then he married, and he now has healthy children. In the beginning of the present year he obtained by some accidental inoculation a chancre on the lip. It became very large, much indurated, and was attended by large glandular swellings. Subsequently a most copious eruption followed, and both in primary and secondary phenomena, the case was as severe a one as I have seen for a long time. It may be that idiosyncrasy has something to do with this exceptional recurrence of liability during the individual's lifetime. In one instance,—in which I attended a member of our own profession twice for syphilis, first when a student, and secondly, ten years later,—the same person

had, he assured me, twice had variola. In respect to vaccination, it is, I believe, well recognized that some persons lose its protective power much sooner than others. Those who, by an attack of an exanthem remain protected through life, may be said in some sort to have acquired a diathesis. It is one, however, which, as I have already asserted, does not manifest itself by any active phenomena, nor is it one the influence of which extends to offspring; or if it does so, it is to an extent so small as to be almost inappreciable. It is a remarkable but undoubted fact, that *quoad* the specific fevers the offspring of protected parents starts afresh. It may be, and probably is, the fact that in successive generations the tissues become to some extent habituated, and suffer less severely, but still they do suffer, and nothing approaching to immunity is ever observed.

I have been speaking of the non-inheritance of the negative diathesis induced by an attack of any one of the specific fevers, but it remains yet to say a few words as to my assertion that none of them produce an active diathesis which is heritable. The only exception to this which will be alleged is syphilis. I shall be asked "Is not the diathesis of syphilis often transmitted from parent to offspring?" Probably it is not the diathesis which results from the disease, but the germs of the disease itself—the particulate elements of the virus—which are transmitted. It is transference, a form of contagion rather than hereditary transmission, which occurs. Two years ago I produced before you, at some length, the facts which point to this conclusion. Since then, by further thought on the subject and the accumulation of more evidence, my opinions on this subject have been much strengthened. We well know that the danger of transmission to children has reference not to the state of health of the parents, but to the lapse of time which has occurred since the primary disease. We see cases in plenty in which parents whose children have been quite healthy, subsequently afford conclusive proof that the diathesis still persists in themselves. Indeed, it is almost an acknowledged law that parents in the late tertiary stages do not transmit taint. On the contrary, when offspring are born in the secondary stage of the disease, especially in its early periods, it is a rule, with exceedingly few exceptions, that the disease is transferred. These facts strongly favor the belief,

that the inheritance of syphilis, so-called, is possible only while the fluids of the parent contain the living elements of the virus. These elements, in a large majority of cases, develop and go through the same stages as if inoculation had occurred at the time of birth. It is far more like contamination *in utero* than true inheritance. By contamination in this use of the word I mean that with sperm or germ (of either or of both parents) there passes the virus itself, the sperm or germ being itself unmodified, but simply the material medium of transference. In the case of the mother we know well that it is not necessary that the germ should have been infected at all, but that if her blood receive the virus, even so late as the eighth month, it will pass into that of the child also. Inherited syphilis, when produced under these last-mentioned circumstances, runs exactly the same course as when derived from a parental taint which existed before conception. A child then, I assert, inherits syphilis in precisely the same sense, and in precisely the same manner, as it may inherit smallpox. It inherits not the diathesis, but the disease. The reason why the inheritance of smallpox is very rare, while that of syphilis is unfortunately common, is simply that the period during which the virus is extant in the blood is very different in the two cases. The conspicuous facts, then, with which we are all so familiar in reference to the syphilis of infants, afford no proof that the diathesis of syphilis, any more than those of the other exanthemata, is capable of transmission. It remains, however, for us to inquire whether there are other facts, of a somewhat different kind, which support the view which I have endeavored to combat. I am alluding, of course, to the old controversy as to whether some forms of struma, and especially such diseases as lupus, may not be modified forms of inherited syphilis. My own belief is very strong indeed to the effect that they are not, but the facts are very detailed and very difficult to marshal concisely. My argument, if I have made it plain, has pointed to the conclusion that no minified transmission of syphilis is possible, that the child gets either nothing at all or the germs of the disease, and that in the latter case they will, subject to the laws of idiosyncrasy, develop equally in all cases.

Let me try briefly to state some facts on this question, and I will then leave it to your judgment. Nothing is more com-

mon than for parents who have themselves at some former time suffered from syphilis, to produce children who remain through life robust and in perfect health. Sometimes one or more of the family inherit syphilis, and suffer, it may be, severely, while others, usually younger ones, escape, and when this occurs the latter may enjoy almost exceptional vigor. When I have seen a whole family of grown-up children, the offspring of syphilitic parents, manifesting signs of cachexia, there has usually been reason to think either that all had actually suffered from the full disease, or that the symptoms present in some were not specific, but due to other causes. I have seen very numerous cases of lupus on the one hand, and of inherited syphilis in young persons on the other, but I have never found the two things together, nor have I ever recognized in the subject of true lupus the brother or sister of one whom I knew to have suffered from inherited syphilis. Of the cases of lupus which I have seen, in a very great number there were strong reasons for denying the probability of syphilis in the parents. I have, of course, occasionally seen inherited syphilis and scrofula together in the same patient, but a large majority of those who suffer from the former never show any tendency whatever to the latter. In what I have said above I have been speaking of course of common lupus, and have wholly excluded that form of destructive ulceration which is sometimes mistaken for lupus, but which is from beginning to end syphilitic, and is curable by specific treatment. I have taken lupus as being a type form of disease, but what I have attested, as regards it, applies equally to other forms of scrofula, to psoriasis, and other diseases, which have been suspected as the remote consequences of specific taint. I believe that the domain of inherited syphilis is just as definite and just as restricted as that of the acquired disease, and that it stands sponsor to none but its own progeny.

LECTURE V.

Mr. President and Gentlemen,—In reference to malignant new growths it is possible to use the word *diathesis* as applicable to two different things. We may mean a state of tissue-health giving proclivity to cancer, or the state which results from the existence of cancer. I will ask permission to employ the word cancer in its old and popular sense, as including malignant new growths of all kinds. This is the sense in which it has been used for centuries, and it is, I think, a pity that it should be changed, especially as we have in carcinoma, as opposed to sarcoma, a very convenient term by which to distinguish for scientific purposes certain forms of malignant new growths from others. In examining as to diathesis, we must merge all the distinctions which have been established by the splendid labors of modern histologists, and speak of malignant new growths as one family. Indeed, it is by no means improbable that some forms of new growth not counted as malignant, ought in this matter to be placed with those which are so, and that we should estimate the individual tendency to new growth in general without paying too much regard to differences of kind. We not infrequently observe that some persons display more than one form, and when hereditary transmission occurs it is very common to see it produce a growth of a kind different from the original. On this doctrine of transmutation in transmission I had much to say in my last year's lectures.

The term diathesis is, I think, to be repudiated, as not suitable in reference to liability to the general diffusion, local recurrence, and failure of health which the existence of cancerous growth produces. These are all the direct and immediate effects of the disease, part of it, and are better named the cancerous dyscrasia. The real question before us is whether there exists any peculiar state of health wholly antecedent to the development of any local growth which

gives proclivity to it. If such exists, and especially if it be in any way recognizable, the term diathesis may be conveniently applied to it. The first observation to be made in reply to this question is that cancer in the main is obviously dependent upon age, that it is in nine cases out of ten part of senility—a sort of second childhood of the tissues. Among the lower animals yet more than with ourselves, cancers are, I believe, almost always the appanage of age. Old dogs and old cats get cancer of the lip or mamma, but these maladies are scarcely ever seen in young animals. When new growths which approach the malignant type are met with in the young there is probably almost always a history of inheritance. If we admit this statement we admit, at the same time, that there is a cancerous diathesis; since it is clear that a state of health may be transmitted which gives proclivity to the disease, without actual conveyance of the cell germs of the new growth. The probability that such states of tissue-health exist, is increased when we take cognizance of the numerous cases in which, with strong hereditary history, no manifestation occurs until adult or even senile periods of life are reached, though it must be admitted that these facts may be held to be evidence in both directions. We shall probably be not far from the truth if we admit senility of tissues, local or general, to be the one predisposing cause of cancer with which we are acquainted; while injuries and all forms of local irritation are its exciting causes. A little step further may next be taken, in the belief that everything which tends to hasten senility, either local or general, will increase the predisposing influence, and in this category may be placed anxiety, distress, over-work, and excesses of all kinds. It is highly probable that under such conditions a state involving increased proneness to cancer may be induced, and further, that if offspring are produced after that state has been developed, they will inherit that tendency. This leads me to say a few words as to the last-suggested cause of diathesis which I have placed in my list. It may have seemed strange to some that it should have been even hinted that senile changes can ever produce anything worthy of that name. It was by no means my intention to propose to re-christen old age by the name diathesis. What had occurred to me was rather this: Are there not conditions of tendency to premature old age which amount

almost to disease and which are sometimes observed to run in families? The results are simply general tissue-degenerations—atrophies, arcus senilis, white hair, pale blood, and general failure of nutrition—and yet the causes are to be sought among the ordinary causes of disease. Both arcus senilis and white hair, when met with, as they sometimes are, early in life in many members of the same family, and wholly without other accompanying signs of senility, may be held to rank as idiosyncrasies of tissue, and imply little or nothing as regards the future. But there are many cases in which they are attended by other conditions, and in which they imply much. It is possible that arcus senilis may be in the course of hereditary transmission sometimes wholly detached from the state of health which produced it, and may become, as we have suggested that hæmophilia and xanthelasma sometimes are, heritable *per se*. More usually, however, it is probable that other conditions, such as tendency to arterial disease, accompany it, and that the total result is a state of premature senility. Certainly there are families in which a tendency runs to early senility rather than to any specific disease. I recently had occasion to amputate the lower extremity for senile gangrene of the foot of a gentleman who was barely fifty, but in whom general calcification of the arteries had proceeded to an extreme degree. I cannot but think that it would be convenient to recognize as a diathesis the state in which premature senility amounts to a disease.

I wish next to ask attention to certain laws as to persistence, self-aggravation, and recurrence, under which morbid processes, due in the first instance to simple causes or possibly quite accidental, may in the end breed diathesis. The best examples of this, which I shall be able to find, will perhaps be in such maladies as catarrh, erysipelas, and elephantiasis. Indeed, in what I said as to carbuncle, diphtheria, and erysipelas, I have already glanced at it. In our last lecture I contended that the specific fevers, in virtue of their own specificity,—and that they are intrusions from without rather than modifications of existing elements and processes,—possess no power of originating pathological habit, and thus do not become the parents of diatheses which are permanent. After a longer or shorter time their influence ends. In the instance of syphilis the length of reign is undoubtedly pro-

longed; still it does eventually terminate, and terminate completely. In my argument on this point I suggested that there was an essential difference in respect to this between inflammations which begin from particulate contagia and those set up by other influences, inasmuch as the latter do tend by the mere fact of existence to develop what we call pathological habit, and to increase in power by the mere fact of possession. It is, of course, not meant that they always do so, for fortunately there are other vital forces which are constantly working in other directions and tending to the restoration of health. What I wish to hint is that there is always a risk that an inflammation once experienced may become more or less habitual, and that its tendency is, if not counteracted, in that direction. In some minor degree this is true probably of all inflammations, even of those which have been caused by injuries. There are several ways possible in which local inflammations or local injuries may become the causes of permanent change in the general health. They may in the first place, by the long-continued pain and irritation caused, reduce the nerve tone, and thus stamp a lasting impression on the cerebro-spinal part of the organization; or secondly, by long persistence they may influence alike the blood and the nervous system. Sometimes it is not persistence so much as tendency to frequent recurrence which effects a similar mischief. Lastly, I shall have to maintain a theory that all inflammatory action is in itself infective, not to the same extent, but after the same pattern as malignant new growths. On this latter point permit me to go into a little detail before I proceed to the others. It is, I am sure, a fact familiar to all surgeons that, when acute periostitis attacks one bone, other bones are very prone to follow. Many years ago this curious fact attracted the attention of Mr. Simon, who wrote on it under the name of "necrosial fever." The affection of the other bones is distinctly secondary to that of the one injured, and not simultaneous. There is usually a considerable interval; and further, those bones which suffer latest never suffer so severely as the first. It is exactly as if from the bone first inflamed some elements had been shed into the blood having the power to infect others. The bones affected secondarily may be in no structural connection with the one first attacked—may, indeed, be at a great distance from it. Thus, I have seen it begin in the tibia and

occur secondarily in the humerus, scapula, and ulna. The risk of implication of other bones exists only during the early stages of the disease, and is, I think, very seldom witnessed after the first fortnight. Mr. Simon's term, "necrosial fever," might perhaps suggest similarity with the form of multiple acute arthritis which we name *rheumatic fever*. In the latter, however, many joints are affected simultaneously and symmetrically, and all suffer in equal severity. In these features rheumatic fever differs much from what I have been just describing, and suggests that the different joints are affected independently of each other and from a cause common to them all. It is quite possible, however, that even in rheumatic fever the law to which I have adverted may be in force. We may remember that sometimes the arthritis does for a short time restrict itself to a few joints, or even to one, and that often some joints which escape at first suffer later on, while the implication of the heart never happens until a considerable time after the first outbreak in the joints. These facts would fit well with the theory that the parts first inflamed contaminate the blood and become the causes of inflammation of similar tissues elsewhere. It may be that it differs chiefly from necrosial fever in that the process is much more rapidly accomplished. At any rate as regards multiple periostitis we may be sure that in it the multiplicity is not to be explained by supposing that there is from the beginning some common cause, since in nine cases out of ten the inflammation of the bone first affected was caused by an injury. All who have paid attention to the development of eczema cases will, I am sure, bear out what I am now going to assert. It is very common for eczema to begin locally, from a known local cause, such as the use of an irritating lotion or poultice, the employment of washing powders, or exposure to heat, and for the eruption subsequently to become general. It is possible that the restriction to the part first affected may be very short, or, on the other hand, it may be very long. I feel that I may almost venture to extend the scope of my first assertions and to say that I believe that it is rare for a local eczema, if allowed to persist, not to become sooner or later a general disease. It would be easy to collect instances innumerable in which eczema beginning around an ulcer on one leg has been followed by eczema on the other quite independently of any

ulceration. It is not extension by continuity of tissue or even by contiguity, but reproduction of the same type of inflammatory action in the same tissue at a distant part. In almost all cases of general eczema there is the history of an early period in which it was restricted to one part. I have several times seen diseases of the finger-nails (chronic onychitis) appear on several fingers and on both hands, apparently in consequence of an injury to one. In these instances there is always, I think, a long interval between the injury and the affection of the other fingers, and during the interval the injured nail has always remained in a state of chronic inflammation. A gentleman who had consulted me a few weeks ago for thickened and opaque nails, and in whom several on both hands were in various degrees affected, told me respecting one which in no respect differed from the others: "Oh, that has been so for thirty years; it was from a crush." I found that the crushed finger nail had been diseased for twenty years before the others began to suffer. He had no skin disease, nor was there any history of such in his family, but I must add that he believed that his grandfather had had some affection of the finger nails. It will be thought by many that this latter fact deprives the case of its supposed significance and reduces it to simply an example of hereditary tendency. I have no doubt that in most cases in which local inflammation shows a power of contaminating the system we must acknowledge the existence of a predisposing cause as well as the exciting one, and it is to this *rôle* chiefly that I should incline to assign inheritance in the case just narrated. No doubt the cases in which local eczema becomes general happen in persons who have a proclivity to eczema, but this fact only reduces and by no means takes away the importance of the exciting cause, since without it, in all probability, the morbid phenomena would never have come into existence. The occurrence of eczema in any part and in connection with any local cause, must rank as a revealing symptom to this extent, that it makes known the fact that its subject is one liable to eczema; but itself must next, if what I have suggested be correct, rank as a cause, and a very efficient cause, of aggravation of the previously existing proclivities. Under this suggested law of self-aggravation the permitted persistence of any local disease may become a source of danger, just as

we well know the permitted persistence of a malignant growth constantly does. Nor surely is there any *à priori* reason why the life tendencies of inflammatory products and of those of new growths should be wholly dissimilar in this respect. Among other instances of maladies which often begin singly and locally and subsequently become multiple or general, we have boils, sycosis, common lupus, various scrofulous affections, and certain forms of rheumatism. Respecting all these I believe that it is true that if they are cured after having persisted a long time, the patient remains far more liable than others to a fresh development. In some sort a diathesis has been produced. In the case of periostitis I have seen some remarkable examples of this.

We have now to consider the laws just adverted to, in relation to those which regulate the recurrence of inflammatory attacks. That certain forms of erysipelas are prone to become persistently recurrent is, as I have already observed, well known. We habitually recognize the fact that some patients are "liable to erysipelas," and expect that in them attacks will be produced by slight causes and that they will prove of much less severity than first ones usually do. If the recurrence has been very frequent the attacks are usually very short and mild; sometimes the intervals are so short that the disease becomes almost persistent. Exactly the same facts are observed as regards proclivity to catarrh in all its varieties. They are sometimes also seen in liability to repeated attacks of diphtheria, a fact which has been recognized by many writers. I had recently occasion to perform tracheotomy in an orphan school on a child who was *in extremis* from croup. In conclusive proof of the nature of the disease we removed at the time a large fibrinous cast of the trachea. The child had passed through, I was informed, four attacks of croup previously. It recovered after the operation, and has, I believe, since been threatened with a sixth attack, which, however, never became severe. There is a peculiar form of œdema of the eyelids and cheeks which is caused by repeated attacks of erysipelatous inflammation, and which results at last in permanent deformity. Of this I have seen many examples. In these cases the first attack is usually one of the ordinary form of erysipelas of the face, with the liability to indefinite extension constantly witnessed in the malady; but the

later ones are limited, both in duration and extent, and the patient at length comes to know what to expect, and to be confident that the swelling will not go further than the face, nor last longer than a week or ten days. In some persons, and especially, I think, in the young, the upper lip and the alæ nasi are affected rather than the eyelids. The type of inflammatory action sometimes, as may be inferred from what I have said, ceases to be the most characteristic of erysipelas, and in others from the beginning it has in minor features departed from that type. Thus there is a form which we might call vesicating erythema which often affects the cheeks symmetrically, is of limited duration, and occurs over and over again. In some instances the vesication is extremely slight, or possibly absent, and erythema with œdema is all that we see. The cases differ from erysipelas in that there is little or no tendency to spread at the edge, and in some instances, in the comparative absence of œdema. They occur I think, chiefly to the young, but adults and elderly persons are liable to recurrent inflammatory attacks of parallel clinical history in which the type of disease is rather that of an acute but transitory eczema. All those diseases appear to be for the most part catarrhal in origin, that is, the exciting cause is usually exposure to wind or cold. They are of great interest to us as proof that maladies which are probably due to very similar causes both predisposing and exciting may yet be attended by differing outward manifestations, and that, when once the type has been taken in the individual, the recurrences will be all of the same character. They also form interesting pathological links one with another, and between erysipelas and its allies. The morbid conditions which I have been referring to certainly establish in the individual who is their subject, through their long persistence or frequent recurrence, a state of health well deserving the name of diathesis, and there can be little doubt that the peculiarity so produced might, and would be likely to, become hereditary. We thus have occasion to note how a permanent and transmissible peculiarity of health may take its origin. Erysipelas has in elephantiasis a congener of great interest. The distinction between the solid œdema which results from recurrent attacks of erysipelas and the more characteristic form of elephantiasis is only a matter of degree, and it is well known as regards

all elephantiasis that repeated attacks of rigors with erysipelatous swelling are constant features of the disease. One is tempted, indeed, to go the whole length, and declare that elephantiasis is, after all, only an example of persisting, or exceedingly chronic erysipelatous inflammation with its resulting hypertrophic changes. Elephantiasis may vary infinitely in degree, but not at all, so far as I know it, in kind. It always begins in œdema, and from this it slowly progresses to hypertrophy. The hypertrophy may implicate the corium and cellular tissue only ("smooth elephantiasis"), or it may involve also the papillæ, and produce the tubercular form. Usually these two forms occur together in different parts of the same limb. The solid œdema, which is its first stage, may begin from a variety of causes. It may be induced by an attack of *bonâ fide* erysipelas, by an injury, by any slight local inflammation, a chancre, an excoriation between the toes, etc., etc. Almost invariably its persistence is favored by the mechanical disabilities of the part, as regards the return of the venous blood and the contents of the lymphatics. We meet with elephantiasis chiefly in the legs, the labia, clitoris, penis, and scrotum, parts which, if once they become swollen, are dependent. The non-symmetry which prevails in a large majority of cases denotes the influence which purely local inflammation has in locating the disease. In some cases it affects equally both legs, and in these it may be taken for granted that the constitutional predisposing cause is strong. Such cases prove the fact of hereditary diathesis. They are scarcely ever met with in England, but only in those climates where the disease is endemic, and in races or tribes which are peculiarly liable to it. When the elephantoid process has once well set in I believe it is never wholly cured; and no better instance could be produced of the pathological advantages of possession. The worse the disease is, the worse it is likely to become. It is emphatically a self-aggravating malady. The mere fact of its existence tends necessarily to its spread. Slowly but surely it undermines the health of its subject, impoverishing his blood, and mainly by the recurring attacks of erysipelas which attend it, enfeebling his tone. Constitutional treatment does but little, and local measures are the only chance of benefit.

We need not feel much difficulty in interpreting the phe-

nomena which we witness both in recurring erysipelas and persistent elephantiasis. They are doubtless examples of the pathological power of habit and indulgence. Just as a man who has yielded to intemperance is in danger of becoming a drunkard, so it is with the tissues. The oftener they have yielded to any special process of inflammation, the more prone are they to yield again. No doubt but that, as in the case of the drunkard and the epileptic, so also here, pre-existing susceptibility takes its share in favoring both the first outbreak and the continuance. This share, however, probably varies much in different cases and may in some have been but very small. The main power at work has doubtless been the increase of proclivity which every recurring attack begets, until at length the habit or the disease, call it which we will, becomes fixed. Nor must we consider, as I have already remarked, that this power of habit will be restricted in its influence to the individual. If children be borne to a man after the habit has been acquired, they will almost necessarily inherit it. The certainty of inheritance will be in ratio with the fixity of the habit and the length of time that it has persisted before the birth of offspring. A great difference must be noted as to the inheritance of proclivities which are developed before and after the conception of offspring. If a disease comes into active existence only subsequently to the production of the whole of the offspring of its subject, clearly the latter will inherit only the degree of proclivity—and it may chance to have been but very small,—which their parent may have originally possessed; but if born after the diseased process has been long in activity, they will take over the original disease much augmented under the force of pathological habit. Illustrations of this in the case of the children of drunkards are of common occurrence. It is all the difference that there is between one who simply bequeaths his patrimony as he received it, and one who has largely increased it by his own gains. Elephantiasis, although precisely the same disease, whether met with in temperate climates or in the tropics, is far more common and severe in dark races and in hot countries. Malaria has, perhaps, something to do in predisposing to it, and heat and moisture unquestionably aggravate it. It is possible, however, that we have much exaggerated our impressions both as to race and climate as strong influences, since

the laws of inheritance will account for excessive prevalence to a large extent when once it has obtained its hold. It may be that we should regard it as to a considerable extent resulting from a diathesis which is heritable in certain families, tribes, and races.

There are certain phenomena which may, perhaps, deserve the name of *Revealing Symptoms*. Not but that all symptoms are in a sense revealing, but these in a special and emphatic manner, since they disclose the fact of the existence of a tendency, which, although present from birth, possibly has never been suspected. Symptoms of this kind occur, as might be expected, in connection with powerful exciting causes. Peculiar manifestations following the employment of special drugs, or the introduction of special animal poisons, may rank under this head. If a patient who receives the virus of small-pox develops a hæmorrhagic eruption, or if acne follows small doses of iodide of potassium, we may feel sure that in these occurrences we have a revelation as to the peculiar idiosyncrasies of the individual. It is certain that those to whom these events happen differ and have probably differed through the whole of life, from others in whom similar causes are not followed by similar effects. The touchstone by which these individual peculiarities may chance to be revealed are innumerable. The behavior of the vaccination sore and that of the primary sore often furnish to the observer an unexpected clue to the peculiarities of the individual. Sometimes the revelation concerns only the specific cause which has been in action, but in others it extends much more widely. For instance, I believe that a clean, well-indurated chancre without tendency to ulcerate or inflame rarely occurs, excepting to a person in sound health, and is far more common in those of dark complexion than in the fair. An opposite tendency on the part of the sore by no means always reveals or implies weak tissues or poor health, but it often does so in a definite manner. In making inferences of this kind, however, we must guard against the error of attaching importance to the state of the sore during the first week, which is usually due rather to peculiarities in the pus by which the contagion was effected, than to those of the recipient. The syphilitic virus itself is, on the other hand, always probably the same, and differences in its results are due to temperament, diathesis, or health-

state of its recipient, and come into the class of revealing symptoms.

Some of these phenomena, deserve, I think, another distinctive name, and may be styled as *Retrospective Symptoms.* They reveal not that which is to come, nor even that which is present, but rather that which is past. In some cases it may be that their causes are still extant and influential, but in many I believe that the symptoms in question occur only at a considerable period after the termination of the activity of the influence which gave it birth, and that they imply little or nothing as to the present health of the patient or his future liabilities. They may, however, reveal a diathetic tendency, which by hereditary transmission may bud out anew in offspring. The explanation of this probably is that they are associated with diatheses which manifest their existence chiefly in middle or early periods of life. The term, *retrospective symptoms,* ought not, perhaps, to be applied to conditions which are simply the remains of bygone disease, however useful in a like way such conditions may be. It is rather to be kept for conditions which originate late, and which, like slow-growing seeds, spring up long after the seed-time. The best example which I can give of what I mean occurs in the instance of xanthelasma palpebrarum. When xanthelasma is developed in various parts of the body in an adult, I believe it is always associated with liver disease, and often with definite and severe jaundice. In these instances it reveals a still extant hepatic diathesis, plus probably some slight tendency to new growth and fatty degeneration. In the far commoner cases, however, in which xanthelasma patches are met with on the eyelids only, no such association is observed; a large majority of those who show them have never had jaundice and are in no sort of danger of it. Many, however, have in former years suffered much from bilious headaches, and if not actually from these, they have experienced repeated temporary health disturbances, attended by dark areolæ around the eyes. It is this fact which the patches in question reveal, and they may occur for the first time long after all liability to the disturbances in question have ceased. They are, therefore, retrospective, and I am inclined to think that in many cases they are solely so, and that little or nothing is to be inferred from them as to the patient's future. In other cases—and perhaps

not a very small minority—the original liability still persists, and will continue to show its effects. But even in these, xanthelasma patches are usually the product of what is long past, and have required a very long time for their production. I have already spoken of certain other and very rare cases in which xanthelasma occurs in young children—possibly in several members of the same family—always in a multiplex form, and without any association with disturbed health. In these curious cases I would suggest that the retrospection is yet further back, and that they reveal the fact that some predecessor has suffered from liver disorder, or possibly been the subject of xanthelasma itself.

It is true of a number of morbid states which have received special names, and are often spoken of as if they were complete in themselves and distinct from all others, that their chief interest for the nosologist lies in the fact that they are symptomatic of diathesis. Their occurrence reveals the states of peculiar health into which the persons showing them have respectively fallen. Thus, as we remarked when dealing with the subject, enlargement of the thyroid gland, when endemic, reveals a diathesis which may end in great degradation of the physical state generally, and we ought by no means to be content to name it bronchocele, as if in that term we had denoted the whole malady. I propose now to take up in succession a number of names which denote according to custom distinct diseases, and to ask concerning each what is its symptomatic value, what does its occurrence reveal, how far may its existence help us to the discovery or recognition of the health peculiarities of the individual.

We will take first *Acne*. Under this name conditions which differ much from each other are grouped, but my impression is that the grouping is to a large extent natural, since they really are closely related. All forms of acne have this in common, and they are due to morbid processes occurring in or around sebaceous glands, and further, that their commonest site is the face, with the exception, perhaps, of white acne or milium, which is due to congenital occlusion of some of the gland orifices and accumulation of white sebum under a thin transparent pellicle of epidermis. All are, at one stage or another, attended by congestion or inflammation. Their differences depend probably upon differences in the character of the

skin in different persons, differences in age, and modification in the ordinary causes. In order that acne should occur, it is essential in the first place that the sebaceous system should be largely developed, and the skin moderately thick. These conditions given, we shall then be able to watch the play of various influences, local and general, upon their subject's health in producing its various forms. If his state of tone and vigor remain perfect, probably his glands will continue to elaborate and pour forth their secretion, without any disturbance. No accumulations will occur, and no secondary congestion around the glands will be observed. But the slightest, the most temporary disturbance of tone may derange the function of these glands, and may permit the retention of a thick secretion, or favor the occurrence of inflammation around an irritating plug. How rarely do we witness the occurrence of acne in any form before puberty, and how frequently do we obtain proof, after that period, that the influence of the sexual system is all-potent in so disturbing the tone that acne spots are produced. In girls menstruation is often attended regularly every month by fresh eruptions of acne, and in boys nocturnal emissions frequently have the same effect. If, however, the integument were originally thin and not greasy, then it is possible for the tone to be very seriously damaged by the causes adverted to, and yet no acne may be produced. In such cases pallor of skin may be the only result. In others in which there is less than usual proneness to inflammation, and perhaps very slight disturbance of tone, a peculiar form of lichen-acne, or very chronic persisting enlargement of the glands without congestion, may occur. This is seen chiefly in the temples and forehead, and in the male sex it is often coincident with similar long persisting enlargement of the glands on the penis and scrotum. The location of acne on the face is probably often explained by pre-existing peculiarities in the state of the skin of the face. Some get acne almost solely on the chin, or on the chin and cheeks, and these are almost always those in whom the nose is specially thin. On the other hand, those in whom the nose and skin generally are thick become liable, when acne is developed, to have the cellular tissue around the glands implicated as well as the glands themselves. Thus, tuberose indurations of a very chronic nature may be produced, which, if in adult life the causes of

aggravation remain, may advance from what is known as acne tuberosa to the most grotesque deformities. Acne is very constantly hereditary, the same form often prevailing in several members of a family, and acne tuberosa, I believe, often descends in several generations from father to son. I have not seen acne tuberosa more than once in women, and in that instance a sister of the patient had common acne, and her male relatives had shown the tuberose form. The pustular or common form belongs to youth, the rosaceous or erythematous to adult life. If, then, we attempt to reply to the question, "What does acne in its various forms imply?" we should, I think, have to answer that in the first place, it denotes original and heritable peculiarity in the structure of the skin; next, that its common form in young persons usually implies greater or less disturbance of tone in connection with the sexual system, and that its rosaceous form results from dyspepsia, attended by flushing of the face after meals. The tuberose variety implies original peculiarity of structure, and is often aggravated by dyspepsia and intemperance. Common acne is almost constantly attended by proofs of enfeebled circulation, such as cold feet, and often by constipation. Closely associated with acne is the liability to styes, to some forms of sycosis, and to boils. With these exceptions I know of no forms of skin disease which are due to the same class of causes or denote the same conditions of health.

A few words may next be said as to the symptomatic meaning of *Eczema*. This symptom is in a large majority of instances so far local that it is curable by local measures, and scarcely, if at all, by constitutional ones, whether drugs or restrictions as to food. Yet it is probable that there is always a minor degree of constitutional proclivity and this is sometimes proved to be hereditary. In a few cases, dietetic restrictions do appear to have important influence, as for instance, the forbidding of milk and sugar. I have already alluded to the remarkable way in which eczema appears to aggravate itself, and when once it has begun is its own source of extension. Probably a great many cases which become severe and general, might have been stopped in the beginning by appropriate local treatment. In most forms of eczema arsenic is useless, and this fact serves to detach it definitely from the psoriasis group. There are, however, certain forms

of nummular eczema in which well-margined patches are scattered symmetrically over the limbs and trunk, in which the disease approaches very closely to a form of psoriasis, and is more or less under the control of the specific for that disease. Putting aside a very large number of mild or local cases, which are clearly due to local causes, we encounter severe eczema in the following forms: First, as a disease of the dentition period of infancy, or what is often equivalent, the lactation or milk-food period. Second, as a most persisting and troublesome eruption affecting only special regions in children and adults, as for instance, the hands, the lips, and the anus. Thirdly, as a general and severe eruption in advanced adult or senile periods of life. It is a noteworthy fact that when infants who have suffered very severely get well, they usually get quite well, and remain well through life. General attacks affecting the whole body occur for the most part near the extremes of life. Applications containing tar, if weak enough, will almost always both prevent and cure eczema. Sea air is often definitely advantageous, and the disuse of milk and sugar are often important. With such facts before us can we find answers to the questions:—Is eczema usually a sign of gout, or of any allied condition of defective digestion? Is it catarrhal? Is it due to structural idiosyncrasy of the integument? I should incline to reply that it is certainly not catarrhal in any correct use of the word. It is not produced by the common causes of catarrh, nor does it display the clinical course of all catarrhs, in the tendency to spontaneous recovery and frequent repetition. Next in many cases it does imply a minor degree of mal-assimilation allied to gout, and is benefitted by abstinence from beer and wine. Recent experience has led me to believe that the offending article is often milk, and to think it of importance to restrict it as much as possible. In very many, a large majority of cases, there is no true gout either in the patient or relatives.

LECTURE VI.

Mr. President and Gentlemen.—There is yet one other skin disease of such extreme interest in varied directions in reference to questions of diathesis, that I feel obliged to bring it in some detail before you. I refer to *Lupus;* and I comprise under that name not alone the common form, but certain other more or less rare varieties of the process, which I trust to be able to claim as certainly belonging to the lupus family. I am not about to trouble you with any detailed description of those several forms, but in order that the questions as to causes, relationships, and the diathesis behind them, should come clearly out, it is necessary that I should state briefly a few facts.

Concerning common lupus, then, I would assert that it is well known that it begins as a cell growth in the corium, that it always begins as a single patch, and always spreads at its edge by the infection of the adjacent skin, and that it very usually tends in the end to become multiple. Its multiplicity, as well as its local spread, is due to its infective power, and its secondary growths are almost always placed in close proximity with the parent one. It never in any case, however extensively multiple its patches may be, shows any tendency to symmetry: in all these features its clinical history resembles that of a local cancer. That which is true of the locally restricted form of epithelioma known as "rodent ulcer" is true also of common lupus. Both are slowly progressive new growths which after a time inflame and ulcerate, and then cicatrize. Both are curable by free measures of local extirpation and by those only. You cannot influence either except in the most minor degree by any remedies which appeal to the general health. Neither shows any power of producing gland disease, nor any tendency to spontaneous amelioration. The one is a disease chiefly, however, of early life, and the other of adult age. The varieties which common lupus pre-

sents do not offer us anything very exceptional to what I have said. According to the constitution of the individual, the state of health, the kind of diet, and the climate, lupus may inflame and ulcerate much or little, and in connection with these almost accidental differences, the old, and I trust now abandoned, terms *exedens* and *non-exedens* came into use. It may vary also very much as regards its restriction to a single original patch, or its tendency to multiplicity. Sometimes we see a single patch steadily spreading at its edge through the greater part of a long life, and never showing any tendency to produce new ones. This probably depends upon comparative vigor of constitution and a lesser degree of susceptibility. The explanation of the secondary patches when they occur is, in all probability, that they are the result of infection. As already stated, the multiplicity is never spontaneous. It is not, I think, beside the mark that I should ask attention to the methods of cure which have been proposed for lupus, as being indications of some affinity with the diathesis of malignant diseases. We have lately been taught by Professor Volkmann that every portion of the diseased tissue should be most carefully eradicated by the scoop. But his proposal had nothing whatever in it that was original in its theory; for long previously we had all been accustomed to act on the same principle, and to seek by the knife, the caustic, or the cautery, to utterly eradicate every fragment of the new growth. If I am not mistaken, we owe to Mr. John Gay—to whom surgery is indebted for many other practical suggestions—the radical proposal that the lupus patch should be cut out with the knife. It is essential that whatever method be adopted it be pursued unflinchingly and over and over again if needed. In this way lupus may be cured, and it is not too much to hope, now that this principle is becoming widely understood, and the profession is becoming bold in its practice, we shall before long witness a great diminution in the number of those who are disfigured by it. My object, however, in mentioning the success of vigorous local measures is not to enforce a lesson in therapeutics, but to intensify our conception of common lupus as a local new growth possessing infective properties. I might add that it often begins from some slight local injury, a sting, an abrasion, or a chilblain. Among the interesting varieties which common lupus presents we have a rare form, which

we may suitably call "acne lupus," which occur in scattered spots over the face, these spots being evidently connected with sebaceous follicles, and often with previously existing acne pustules. Their arrangement, however, I believe, never follows that of acne in being symmetrical, but always obeys the law of lupus, in that the secondary tubercles are more or less near to the parent one. In another variety, lupus attacks mucous membranes and produces slowly spreading ulceration, attended with papillary outgrowth. That lupus of mucous membranes as we see it affecting the conjunctiva, the gums, the palate, etc., is really lupus is proved by its very frequent association with well-characterized disease in the skin. In another extremely rare variety, of which I have seen but a few examples, the lupus growth is exceedingly trivial, does not ulcerate at all, spreads rapidly at the edge, leaving behind it a thin, supple, and healthy scar. In yet another variety it receives modification probably from the part in which it occurs. It is but seldom that we see well-characterized lupus on the hands or feet. But we often encounter a form of disease which takes its place, in which there is less evidence of new growth and more of inflammation and tendency to papillary hypertrophy. To this group, the form of inflammation due to dissection wounds on the hands—necrogenic warts of Dr. Wilks, or necrogenic lupus, I think belongs. There is yet another variety in which the surface of the lupus patch does not ulcerate, and is not raised, but weeps, like an eczema, presenting a condition which would at first sight, and certainly by the inexperienced, be mistaken for eczema. The facts to which we appeal, in proof that all these very different looking inflammations of the skin are really lupus, are that they all take origin at a single spot, spread slowly but constantly at their edges, and whether they ulcerate superficially or not, always leave a cicatrix where they have passed. I do not think that there can be much hesitation in accepting the statement, that a disease which presents these features, and is not either a cancer or syphilitic, must be a lupus.

We have arrived, then, at the end of our first stage in the inquiry, and have seen that this peculiar form of new growth in the skin and mucous membrane to which young persons are liable may, while observing identity in essentials, manifest very peculiar differences in external appearance. It may be in

single patches or multiple; it may look like itself, or like an acne, a lichen marginatum, or an eczema. These differences have more to do with the original differences in the texture of the skin which is attacked than any other class of causes. Let us notice the peculiar thinness and delicacy of the skin in the boy who furnishes us the example of what I have called *lupus marginatus*, in which exceedingly little growth and no ulceration occurred. We have now to take another step and to encounter another process with far more important differences. The diseases which are known as *lupus erythematous*, and its variety *lupus sebaceus*, are more than a mere modification of common lupus. They are distinct varieties, or, if one dared to use such a word, they are almost species. They manifest relationships with other type-forms of skin disease, almost as close as those they bear to common lupus. Had it not been for the fact that the common form and the erythematous form, often exist together or slide into each other by insensible gradations, we might have been tempted to prefer to call erythematous lupus by some other name. Its most important difference of feature is that it usually occurs symmetrically. Thus there is far more reason to believe that it is due to a constitutional peculiarity, than is the case with the absolutely non-symmetrical and local lupus. The arrangement of the bat's body and wings, on the nose and cheeks, in erythematous lupus is well known. The parts affected next to the nose and cheeks are almost always the ears, and next to them the backs of the hands. In this spreading there is no continuous connection between the patches. They are separate from each other, and apparently independent. The evidence as to multiplication by infection is far less strong than it is in the common form, though there can be not the slightest doubt that this kind of advance does take place at the edges of the patches. Remembering what I had to advance in our last lecture in reference to the possibility that all inflammatory processes may be capable of infecting the blood, I am unwilling to admit, even when we see lupus erythematosus on the backs of both hands, while the whole of the rest of the upper extremities and trunk remain free, that we have conclusive proof that these secondary manifestations are independent of the original patches on the face. The symmetry cannot possibly be due to any other cause than pre-exist-

ing proclivity of tissues; but it is just possible that it is not independent of an infective process also. At any rate, it is true that this disease is wonderfully symmetrical; the ears, the cheeks, and the backs of the hands show exactly the same conditions on the two sides. The variety to which the name sebaceous is given is often not erythematous at all. There may be no redness and no swelling, but the skin becomes dry, rough, and shrunken, and the orifices of the sebaceous follicles are very conspicuous, like the inner side of a nutmeg grater. This form is also accurately symmetrical, but it rarely leaves the face. If you see it on the nose you may look for it on the ears, and in the middle of the concha of each,—just where in acne a group of comedones is often seen,—there will be a little patch of lupus. Lupus sebaceous and lupus erythematosus are frequently mixed in the same case, and they are probably the same disease modified by peculiarities in the skin. Although I have described them both as usually symmetrical, not unfrequently exceptions occur. Under all conditions they show their alliance with lupus by leaving the skin which they have affected in a state of scar. I suggested that lupus erythematosus had alliance with other skin diseases, and I was thinking especially of psoriasis and those modifications of nutrition known as chilblains, and my suggestion will now be that it owes its peculiarities to the mingling in varying proportions of these two diatheses with that of lupus. As regards chilblains, it is sometimes, when the ears and the backs of the hands are affected, quite impossible to differentiate between them and lupus erythematosus. The latter, like chilblains, is always worse in cold weather, and it usually occurs to persons of feeble circulation, in whom venous congestion easily occurs when the surface is chilled. Its alliance with psoriasis is shown, not alone by its symmetry, but by the fact that in exceptional instances the scaly patches may be seen on the tips of the elbows, with now and then a diffuse psoriasis condition of the whole surface. Children and young persons are but rarely the subjects of lupus erythematosus, nor does it usually attack those in whom the skin is thick.

I think we may assert respecting lupus as a whole that it is a sort of cross produced by tendencies at once to scrofula and cancer, and that it receives many modifications from peculiarities in the patient's skin and his morbid tendencies

in one or the other direction. If he has a degree of tendency to the psoriasis diathesis it will assume the erythematous form, and it will be especially prone to attack the extremities if it encounter also the proclivities to chilblains.

I have yet left for consideration another variety of lupus concerning which a few words must be said. It is a disease which differs much from all forms which we have described, and yet I submit that it is really a lupus. I know as yet of but four recorded examples of it. The late Dr. Tilbury Fox showed at a meeting of the Pathological Society a young man on whose thigh were two different and very peculiar conditions—one being a congenital port-wine stain and the other a persisting vesicular eruption which had been developed at a later period. As a result of microscopical examination, Dr. Fox believed that the vesicles in question were in connection with the lymphatic trunks and spaces. At the same meeting I mentioned two cases in which I had for a considerable time taken much interest, but which we neither of us then thought to be exactly similar. A third case has subsequently come under my observation, and I have now no hesitation in believing that the four are examples of the same malady, and that the lymphatic trunks are really implicated. Whether it deserves the name of Lupus Lymphaticus I must leave to your judgment. All the four patients were boys; in all the disease had existed for several years; in all it was slowly spreading at the edge, and producing, near to the parent patch, secondary ones, which were apparently due to infection. In none of the cases was there ulceration, and in all the eruption consisted of little firm resisting vesicles which showed no tendency to rupture, and were aggregated into confluent groups. Upon these vesicles and at their bases were little tufts of capillaries which were almost nævoid in character. By microscopic examination of portions cut from all three cases, I have satisfied myself that the lymphatic trunks are dilated, and further, that there is a new cell-growth around them exactly like that of common lupus. So similar is this cell-growth to that of lupus that a very able microscopist, who examined one of my slides, took it for a specimen of that disease. It is right that I should add that in this microscopic examination I have been much assisted by Dr. Sangster, Mr. Robert Parker, and my eldest son. My belief is that the malady in question bears the same

relation to the lymphatics that lupus erythematosus does to the blood-vessels, and that it is an instance of a new growth assuming special clinical features in connection with the peculiarity of the special tissue in which it takes its origin. As in cancer everything depends on the tissue first affected, whether the growth is a melanosis, an epithelioma, or a scirrhus, so in lupus permanent modifications are stamped on the process according as it begins around the sebaceous glands, the blood-vessels, the lymphatics, or in the corium. When the type has been once taken it will be retained.

The various forms of *Iritis* are of peculiar value as indications of diathesis. Its occurrence in infancy, a very rare event, is usually indicative of syphilis. In adolescent periods, and early adult life, we have different forms of iritis, all of which generally imply the inheritance of gout. This inheritance is, in such cases, often modified by other individual peculiarities, such as feebleness of circulation and proneness to chilblains. When this is the case, a very peculiar form of multiple arthritis which begins in the last joints of all the digits, and often affects them exclusively, is sometimes seen. The explanation of last-joint-arthritis is doubtless to be found, as I have just suggested, in the peculiarity of circulation which in later life gives tendency to symmetrical gangrene of the extremities, as so well described by Raymond, and more recently among ourselves by Dr. Southey. It is not, however, due to this alone. There is always joined with it an inherited tendency to gout. The form of recurrent iritis which we meet with so frequently in adult men, but occasionally in women also, in which the attack is sharp and severe, the interval of immunity complete and the recurrences take place once a year, or oftener, is, I believe, distinctly an indication of rheumatic gout. It does not very often happen to those who suffer severely from declared gout, and it is very rare in connection with rheumatism only. We meet with it in those in whom there is inherited proclivity to gout, who have lived rather freely, who are susceptible alike to weather and to diet, but who have never themselves had an outbreak of true gouty arthritis. The fact that this form of severely paroxysmal iritis occurs much more frequently in men than in women, supports the general statement which I have just made. In women of middle age, or a little past it, we encounter iritis in

another form, as an insidious disease, attended by a little conjunctival redness, but with some sensation of heat and irritability, and gradually, without any definite paroxysms, producing extensive adhesions. The little exacerbations which attend it are often more definitely influenced by exposure to cold and wind than by diet. This form of iritis is, I believe, almost invariably a consequence of a remote inheritance of gout.

I tried in a former course of lectures to give a definition of the word *Catarrh* which should enable us to employ it for more accurate clinical purposes than it is often used. I suggested that it should be held to imply identity in cause, and not similarity in result. There is surely no good reason why all forms of inflammation of mucous membrane, attended by free discharge, irrespective of their causes, which are often very different, should be called "catarrhal." On the other hand, if we use the word in the sense which I contend for, we shall find it applicable to other inflammations besides those of mucous tissues. In so doing we shall construct a large and perfectly natural group of maladies. Whatever is the result of catching cold is catarrhal; conditions which follow from other and dissimilar causes, however similar their results, ought to be refused that name. The catarrhal diathesis, using the word in this sense, is one of the three fundamental ones. It is not due to any specific or any specialized cause. Every organization possessing a nervous system must be supposed to be capable of manifesting it, for its essence consists in proneness to inflammatory congestions excited, in a reflex manner, through the influence of cold applied to the surface. The susceptibilities of the nervous system, however, in this direction differ, as we all know well, very greatly in different individuals. These differences are hereditary, and may easily become the possessions of families or of race. Not only do individuals differ in the degree of reflex susceptibility, but they also vary much as to the special tissues or organs which are most prone to suffer under it. Thus, some catch cold, almost solely in the mucous membranes of the nasal passages and pharynx; in others, the tonsils, throat, and larynx are more prone to suffer; in others the bronchial mucous membrane; and in others the stomach and bowels, or even the liver. Although I shall admit rheumatism to the rank of a

universal diathesis and place it for the present in this respect side by side with scrofula and catarrh, yet in doing so I shall have to suggest, as indeed I have repeatedly done, that rheumatism after all is only the catarrhal diathesis affecting the joints. Let me state a few general facts respecting catarrhal affections, and then pass on. First, it is a great mistake to imagine that only those of delicate constitution, and accustomed to much protection from weather, etc., are liable to catch colds. Farm laborers and others engaged in laborious out-door pursuits, often show this susceptibility very definitely, and suffer very severely. My impression is, however, that the peculiar degree of susceptibility which causes its possessor to experience slight catarrhal symptoms on every little variation of accustomed exposure, is rarely reached in them. They take cold but seldom, and when they do, it is in connection with some exceptional cause, and the catarrh developes with exceptional severity. I have, however, met with some remarkable instances of extreme development of the catarrhal diathesis in those who are constantly out in the open air. Especially well I recollect an apparently robust farmer, who could do anything he liked out of doors, but who could not sit in a carriage with an open window, or for ten minutes with his feet on a stone floor, without catching cold. It is a general law of all catarrhal affections, and well recognized in the experience of every one, that they are spontaneously curable, but very liable to recurrence.

All forms of catarrh pass off spontaneously after a while, and in many persons their duration is tolerably regular, and the period of immunity often keeps to the same average length. When we find the results of a catarrhal inflammation threatening to become lasting we feel sure that the diathesis is a complicated one. It is one which very easily mixes itself up with other forms of ill-health.

We define scrofula to be a state of the solid tissues, and more especially of the lymphatic system as a whole, in which there is peculiar proneness to chronic inflammations resulting in products more or less peculiar and specialized. Modern discoveries will perhaps lead us to believe that those specialized products are usually accompanied by the presence of particulate organisms which are neither part of, nor derived from, the original tissues. Be this as it may, we shall have

to study the scrofulous diathesis, and the predisposing causes of scrofula, just as before. We shall still have to ask what are the conditions which favor, or otherwise, the development of the bacillus in question. Even the firmest believers in the new facts admit this. Looking, then, upon scrofula as a permanent and heritable condition of the tissues favoring chronicity in all inflammatory processes and directing them towards more or less specialized ends, it is easy to see that in such individuals catarrhal attacks may depart from their usual type, and may not show their natural tendency to spontaneous disappearance. As a matter of fact, we are only too familiar with the danger of catarrhal attacks in scrofulous subjects.

But it is not alone in the scrofulous that we encounter risks in connection with catarrh. Those in whom the tissues have undergone senile degeneration, and those, too, who although not old have become seriously enfeebled by other causes, often show an inability to shake off catarrhal attacks, and a similar result sometimes brought about under the law of habit, when catarrhal attacks have been exceptionally frequent and severe. Apart from the risk of lapsing into chronic disease, catarrhal inflammations are in themselves not unfrequently dangerous to life. Many of the forms of acute bronchitis and pneumonia, and some forms of enteritis, peritonitis, and pleurisy, are distinctly catarrhal in their nature—that is, they result from the exposure of an individual to the ordinary causes of a catarrh—and in many of these the popular expression is verified, "he caught his death of cold." Rheumatic fever very often, as is well known, acknowledges a similar cause; and respecting it and the other acute and dangerous catarrhal inflammations, one general statement is true—that if the patient can only live through the attack it will in due course pass off, and pass off completely, leaving him again in good health. This remarkable facility of spontaneous recovery which is a feature of all catarrhal, or, in other words, of all reflex nervous inflammations, has placed physicians in great difficulty in coming to any satisfactory conclusions as to the relative merits of different plans of treatment. I will not say that cases of acute pneumonia, or acute rheumatism, or severe catarrh recover as well under one plan as another—I should be going far out of my province to make any such insinuation, and I should be saying, too, that which, with my small amount

of information, I certainly do not believe. This, however, I must repeat—that there is in each and all of the examples of this type of inflammatory attack, a natural tendency to recovery at a certain stage, which the student of therapeutics must always keep in mind. Although I have spoken of cold, in combination with damp, as if it were the sole cause of catarrh, it must by no means be supposed that this is exactly so. With the changes in temperature there are doubtless, frequently coincident and very influential, certain electric disturbances, of which it is very difficult to take exact appreciation. To these we must refer the great prevalence of catarrhal and catarrho-rheumatic affections at certain seasons, and during the prevalence of certain winds. This prevalence is sometimes such as to suggest, as in the case of influenza, that the air must carry with it particulate and contagious germs. The sum total of what are included in the meteorological conditions termed weather must count as causes of catarrh.

I have placed the rheumatic diathesis with the catarrhal and the scrofulous, as one which is universal, and in which all human beings share in some degree. What I have said as regards the laws of catarrhal inflammation apply very closely to those which are rheumatic, for the two are, as regards their causes, very nearly allied. Rheumatism like catarrh is usually transitory, especially when it occurs in the young. As with catarrh, so with it, when the aged are its subjects there is danger that it may become chronic or even permanent. Like catarrh, it may mix itself with scrofula or be modified by any other influence which disturbs the general health. The effect of malaria upon the system is often seen to much increase the proclivity both to catarrh and rheumatism. One other diathesis so very frequently mixes itself up with rheumatism, and the two in hereditary transmission become so intimately united that it is a matter of considerable difficulty to ascertain how far rheumatism pure can go. We can, however, have little hesitation in admitting that it may be the parent not only of rheumatic fever, of transitory rheumatic pains in joints, fascia, and muscles, but of chronic crippling arthritis, in which almost all the joints are involved, and in senile periods of the slowly destructive arthritis which wears away the cartilage and eburnates the bones. Further, I think

we may grant that it is not unfrequently the parent of sciatica and lumbago. All the affections which I have mentioned occur occasionally to those in whom there is no reason to suspect a gout complication; and, what is a still stronger fact, they are met with occasionally in the lower animals. Having said this I must not delay to add that in a great many of the exaggerated and peculiar forms of them which we witness in the human subject, the cause of the peculiarity is an hereditary complication of gout. When this complication exists it shows its power, we may suspect, by inducing a permanent modification of tissue; and it is to this modification that the peculiarities in the processes are due. Hence the impossibility, under many conditions, of discriminating between gout and rheumatism. We can for the most part easily tell, in any individual case, what the causes which have provoked the attack have been, and we can assign them on the one hand to those of rheumatism or on the other to those of gout; but we cannot estimate with any chance of certainty the previously acquired proclivities of the tissues. There is yet another source of fallacy, that we are by no means always acquainted with the condition of the patient's health at the time of the attack. If a patient already predisposed to gout, in his kidneys, his tissues, or his blood, be exposed to the exciting causes of rheumatism, he will have one of those attacks which you yourself, Mr. President,[1] have so well described, and about the nature of which there has been some controversy. There will be difference of opinion as to whether such an attack should be called rheumatic fever or generalized gout; and the solution of the question is, I suspect, to be found in the fact that it is both. Two sets of causes have been at work, and the result has been a mixed one.

When a little white tophus is seen on the ear, the merest tyro can read its lesson, and the veriest sceptic dares not refuse its revelation. It is both retrospective and prospective in its significance; we know that the patient's kidneys have become unsound, and that he has failed, in the past, in the due depuration of his blood. We know that this loaded blood condition must have put him in danger of attacks of arthritis; and that in all probability he has suffered on many occasions from

[1] See Spencer Wells on Gout, p. 66; also Garrod on Gout, p. 42.

acute and very painful inflammations of some of his smaller joints. We know further that changes have taken place in many of his tissues, and especially that the walls of his blood-vessels have become thickened. Looking into his future we know he is in danger not only of other attacks of arthritis, but that, however carefully he may restrict his diet and manage his mode of life, it is probable that the renal and arterial changes will increase and bring with them their peculiar inconveniences and risks. We know further that if a man in such a state should have children, they will, in spite of the utmost care in avoiding the dietetic causes which originally produced it, inherit some of the peculiar tendencies which he had acquired. Where the inheritance will stop, how far it is possible for one structural peculiarity to be isolated, and to be inherited apart from others, we do not know. There is, however, I would suggest, good reason for believing that in families in which, either by accidentally changed conditions, or by intelligent foresight, several generations have been carefully exempted from the causes of gout, its existence, in times long past, may still be shown in the perpetuation of one or other, more or less isolated, tendency to structural disease. It is under such conditions that not a few of the forms of rheumatic gout occur, although in others, and perhaps a large majority, it is rather the fact that the exciting causes of gout have by no means been wholly suppressed. In this way we may have to recognize, as lineal descendants of gout, maladies which occur in those in whom we can by no means prove its persistence. I have referred repeatedly to the facts which favor the belief that the hæmorrhagic diathesis itself may, perhaps, belong to this category; and in a former course of lectures I analyzed the facts contained in Dr. Wickham Legge's able monograph on this subject. During the past year some very interesting cases have come under my observation, which serve to give support to it, and to lead to the conclusion that many, if not most, forms of intractable hæmorrhage are in connection with hereditary peculiarity of the arterial system, derived from gouty progenitors. I will mention only three, and these very briefly. A gentleman who consulted me a few weeks ago, with cataract and diabetes, told me that he had been most of his life liable to very profuse attacks of hæmorrhage. In early life they had been alarming, and sometimes

so frequent as to be almost constant. They were always preceded by a sense of weight and discomfort at the epigastrium; and provided the hæmorrhage was not too profuse he had usually felt relieved by it. There was a strong inheritance of gout, and he had himself suffered from several attacks. A school-boy was sent to me by Mr. Harrison, of Braintree, on account of repeated and alarming attacks of epistaxis. They had been so profuse and so frequently recurrent that he had lost much of his color and strength. The point, however, which most caused anxiety was that his elder brother had died of it. In him the liability had commenced at thirteen and a half, had persisted for two years, and finally, after continuing for four days, it ended in death. Their paternal grandfather had suffered much from gout, and their father at the age of twenty-two had had severe epistaxis. In the case of a lady, now aged twenty-nine, and much out of health, I had the following history:—She had always suffered from indigestion and rheumatic pains. At the age of seven she had epistaxis to such an extent that the nostrils had to be plugged; and in spite of that measure it was, during three days, expected that the attack would end fatally. She once had bled to an alarming extent in consequence of tooth-drawing. Her first menstruation had soaked the bed through; and ever afterwards this function had been attended with losses so profuse as to have greatly enfeebled her. There had been much gout on both sides of her family, and she herself had had symptoms very like it.

I was unable, when examining this subject last year, to agree with Dr. Wickham Legge in his opinion that cases of remarkable tendency to hæmorrhage, occurring, as it were sporadically, should be kept quite apart from the hæmorrhagic diathesis, in which we observe the tendency to prevail in direct descent through many generations. It may be that as a matter of convenience it may be well temporarily to effect this separation, but it must, I think, be with the clear understanding that it is a conventional one. The hereditary cases are those in which the idiosyncrasy has become definite and established; the others show us the idiosyncrasy in connection with its original causes, and, if I may so express it, in process of breeding. The cases of hæmorrhage into the vitreous in young men suffering from constipation which have been

collected by Mr. Eales, of Birmingham, and in many of which no history of gout could be obtained, go with other facts to make it probable that tendencies to bleed are sometimes met with in association with other causes. My own experience as to retinitis hæmorrhagica, blood patches in the conjunctiva, cerebral hæmorrhage, epistaxis, and other allied disorders, leads me, however, to attach very great importance to the history of inherited gout as their frequent cause.

There is one subject which it is impossible to leave out of the account in our estimation of the diathesis. It does not constitute a diathesis in itself, but it complicates them all. I refer to the changes in the state of the nervous system, or quality of the nerve force, which we know as *tone*. By that word I suppose that we mean the power of producing nervous energy. If we speak of the tone as low and poor, we mean that there is but little vigor in resisting irritation, and that comparatively slight influences will evoke a large amount of disturbance. That vigor depends, no doubt, upon the state of nutrition of the nerve-cells themselves, and it may vary much in different parts. Thus, the tone may be diminished in one nerve district and yet be good in others, while in some instances it is reduced in all, simultaneously. A condition of great general exhaustion is by no means, however, always equivalent with a state of low tone; it is necessary that the enfeeblement should pertain to the nervous system especially, in order that that term should become applicable. Perhaps it is further true that in most of the conditions in which derangement of tone is in question, the disturbance or enfeeblement has reference chiefly to that part of the nervous system which controls the circulation. Whenever the circulation is specially liable to reflex derangement, and congestions or their opposite occur with unusual facility, we are safe in declaring that the tone is low. It is part of the business of the nervous system to duly regulate the supply of blood to various parts, to prevent local arterial spasms, and under the varying conditions of daily life to maintain the normal balance of circulation. When this power is deficient the various causes of disease act with greatly increased effect. In many cases loss of tone may be so long continued and so great that we cannot but suspect that it depends upon degenerative and permanent changes in the nerve cells. Not only may loss of tone aggravate a dia-

thesis, but many of these act very efficiently in producing loss of tone. Thus the influence of malaria is very definite in this direction, and is felt through very long periods. But I cannot for the present dwell longer on this part of my subject.

The present is, perhaps, the most suitable place for me to interpolate two emendations on former lectures. In my first lecture I adverted to the want of observations for the purpose of estimating the relative frequency of the different complexions in the British population. In doing so, I omitted to mention the excellent work accomplished some years ago by Dr. Beddoes, of Bristol. I had intended to mention it, and should certainly have done so if I had remembered its extent and value. In a subsequent lecture I urged the importance of Life-Records, which should be kept in advance, ready to be produced to any medical man who may be consulted, and especially comprising mention both of family tendencies and of idiosyncrasies of the individual, and the diseases which have been passed through. In making this suggestion, which had long occupied my thoughts, I was not aware that the Collective Investigation Committee of the British Medical Association already has in hand a scheme for its realization. I have since with great pleasure been informed that such is the fact.

It is time that I should bring this lecture to a close, and with it will end my present course. In doing this, I desire, gentlemen, to thank you most sincerely for the very courteous attention with which you have listened to what I have advanced. Permit me at the same time to attempt a very brief *résumé* of the principal arguments.

We began by a glance at the praiseworthy and to some extent successful attempts made by our forefathers by looking into a man's face to determine therefrom his physical peculiarities and his liabilities to disease. On examining the facts supposed to indicate "temperament," I was obliged to conclude that part of them were merely the characteristics of different races; and another part, merely the products of past disease—personal or inherited. Thus it seemed that if race took its share, and disease that which legitimately belongs to it, there was very little left to be classed under the head of "temperament." As regards diseases in general, I suggested that the plan most likely to be productive of good results is to classify the chief groups of morbid influences, and to endeavor

then to associate with each the separate maladies and tendencies which are dependent upon them. To this object our last three lectures have been devoted. We had previously endeavored to clear the ground somewhat by placing in a separate category a large number of symptoms and of morbid manifestations which take their origin in individual peculiarity, quite apart from any recognizable tendency to disease. I insisted that the domain of mere *Idiosyncrasy* is very large. I suggested that these peculiarities may have had their origin remotely in disease, but asserted at the same time that they have often existed for many generations in complete freedom from any such association. Whether I have succeeded in convincing you that it would be a convenience in medical teaching and practice to revive the old doctrines of diathesis I do not know. To my own mind it does appear, I may confess, that the states to which I have sought to apply that name are realities which it is very desirable to recognize. It seems to me, also, that the habit of naming diseases as if they constituted separate and complete entities has often a narrowing effect upon our pathological conceptions, and leads to the overlooking of special causes. My endeavor has been to look at disease not exclusively from before, but, so to speak, to get behind it and trace its origin. Classification should surely depend not upon external similarity, but relationship in cause. We should seek to place diseases in natural groups, in connection with their ancestral descent. The attempt to do this has, I fear, sometimes led me into speculations as to the genesis of the different forms of diathesis which may have seemed somewhat transcendental, and been possibly a little wearisome. I can only plead that I have done my best to avoid these faults, and I have been endeavoring to thread my way through the mazes of a most complicated topic. The main conclusions as to the diathesis which I have suggested for your acceptance are these:—That there are three great universal diatheses dependent upon the very commonest cause of disease by which man, and not man only, has been assailed from the most primeval times. These are—the catarrhal, the rheumatic and the scrofulous. Close to these come others of far less importance, but of parallel nature, because they comprise us all in their range of liability; the diathesis of senile degeneration and the diathesis of malignant new growths.

Next we have certain very important ones which are widely spread, but by no means universal, since they depend upon local exposure or personal habits. In this class we have the ague-diathesis, the diathesis of rickets, those of bronchocele, scurvy, leprosy, pellagra, and gout. Respecting the diathesis due to *malaria,* I have some doubts whether it ought not to be admitted to the dignity of a primary or universal diathesis. If we go far enough back, probably the whole human race has been submitted to its influence, and not less probably has some impression from it been stamped upon us all. It may even be doubted whether now, in our advanced stage of civilization, those who are apparently exempt from all possibility of influence from marsh miasm may not still, in some minor degree, suffer from its remote effects. It is very possible that, although the severity be far below what is needed to produce an intermittent, yet that the well-recognized ill-effects of certain winds quite disproportionate to their chilling power may be due to slight impregnation with malarial poison. As to the diathesis of gout, I have suggested that it is but rarely of pure breed. Very often it builds on the foundations laid by other maladies, and however much it may boast itself *dominus morborum, morbus dominorum* it is, if we see it aright, very often merely a complication of plebian rheumatism. Other diatheses have been mentioned which it is difficult to place in any definite arrangement. That in which there is remarkable tendency to hæmorrhage I have associated, for the most part, either directly or remotely with the disease of the arterial system induced by gout. That which is characterized by failure of nerve tone I have linked in a like manner —not invariably, but still very commonly—with the influence of the sexual system upon the general health. So also of the state characterized by undue mobility of nerve force, or emotional susceptibility, known as hysteria. That there are hereditary diatheses which are characterized by peculiarities in the state of the different viscera, or of specialized systems, has also been suggested. In this category we have the hepatic diathesis, the diathesis denoted by chilblains, and that in which the vascular system generally is very feeble; and there results the liability to venous congestion in exposed and distant parts—even to gangrene of the extremities. I made no attempt at completeness in the enumeration of the diatheses, for

it is clear that a little ingenuity might subdivide or define them to an almost endless extent. The description of a fresh diatheses is, in fact, almost as easy as the discovery of a new nerve centre, or the revelation of a new bacterium. Let me not be thought to speak in the least slightingly of modern investigations in the two latter directions. I simply couple them with the attempts made to classify morbid phenomena, and to say of them all that they are, for the present, tentative, and that the experience of the profession in the future must assign them their real value.

Finally, I think I may claim in all that I have said as to idiosyncrasy and diathesis, that I have done my best to recognize the power of hereditary transmission, and to insist that we ought to study disease as being, not of recent origin, or in dependence solely upon existing influences, but rather seek to truthfully "read the record of its long descent."

Again I must ask pardon, as I have already once done, for the fact that I have doubtless often appeared to be stating as somewhat novel, things which are well known and almost commonplace. I could not possibly, from the nature of my subject, have avoided this, nor, indeed, have I made much attempt to mark out what I wished to claim as original. It is abundantly sufficient for my ambition if, availing myself thankfully, so far as my knowledge extended, of the labors of those who have gone before me, I have succeeded in any degree in making opinion more definite, and giving emphasis to that which is true.

LECTURES ON THE TREATMENT

OF THE

Common Diseases of the Skin,

BY

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COMMON DISEASES OF THE SKIN

LECTURE I.

PRURITUS.

Before considering the treatment of skin diseases, it is advisable to refer to *Pruritus*, a condition common to many of them, and to nearly all of those we meet with in ordinary practice. No symptom is so troublesome to the patient, or more readily brought under the influence of remedies, provided the cause can be ascertained. Such a cause is furnished by any irritant, an animal parasite for example, which induces hyperæmia and stasis of the blood in the papillary body. In consequence of this the terminal filaments of the nerves are pressed upon and itching results. It is, however, important to remember that general itching may result from localised causes, and hence, a single louse may be the cause of diffused and intolerable Pruritus.

The presence of the itch insect, of bugs or fleas, and less frequently of vegetable parasites, especially the Tricophyton Tonsurans are common causes of itching.

Eczema is essentially an itching disease, especially during the acute stage; and psoriasis also induces itching, but in a lesser degree than eczema. In both of these diseases the itching is aggravated by warmth, and is especially complained of when the patient is warm in bed.

Syphilides, as a rule, itch very little or not at all, and only on their first appearance; hence, this fact is one of very great importance in making a diagnosis between simple and syphilitic eruptions.

When Pruritus is due to any of the above causes, it may easily be relieved, and cured entirely by the removal of the

exciting cause, but when it is so to speak a substantive disorder, and the first symptom of skin trouble, local or universal, its treatment becomes difficult, and often very unsatisfactory.

Such conditions are pruritus ani, and pruritus senilis.

Pruritus ani is often due to eczema, thread worms, piles, or excessive sweating, but occasionally occurs independently of these, and is frequently associated with a similar affection of the scrotum in men, or the vulva in women.

Pruritus senilis is possibly due to trophic changes in the skin, especially the loss of subcutaneous fat, and is most difficult to treat. Like all other forms of pruritus it soon becomes associated with the presence of excoriations. These occur naturally on those parts which are most easily reached by the fingers, and especially about the lower part of the body and the shoulders.

As might have been anticipated, pilocarpin and hot baths, which increase the activity of the sweat glands, are harmful, and the greatest relief is afforded by cold bathing, and by the use of evaporating lotions. Preparations of tar and sulphur are generally recommended, but in my hands they have availed little; sedatives such as opium and potassium bromide are of no curative value. It is possible, of course, to get a good night by means of narcotics in large doses, but the disease is always chronic, and the abuse of narcotics, which at best procure a brief respite, is a remedy worse than the disease. Very dilute solutions of hydrargyri perchloridum (gr. xv. to a pint of lime water) sometimes relieve, but I know nothing better than the free use of Eau de Cologne, or of Hazeline, mixed with an equal amount of cold water. These should be applied with a sponge, and frequently used, especially before going to bed. In some cases I have thought relief has been afforded by taking diuretics, and so throwing part of the work of the skin on to the kidneys. The acetate of potash in twenty-grain doses answers this purpose admirably.

If pruritus ani be due to hæmorrhoids or worms, the treatment of the symptom becomes that of the disease.

Serious hæmorrhoidal trouble of course necessitates drastic and surgical treatment, but the milder form will generally improve under the use of unguentum gallæ copio, or unguentum hydrargyri. The treatment of thread worms is familar to all of us, and its non-success, unfortunately, only too fre-

quent: but I have latterly had surprisingly good results from the internal administration of lime juice, after the failure of the ordinary remedies. If pruritus depends on excessive sweating, the parts should be dusted with a powder of equal parts of tartaric and boracic acids.

If it appears to be idiopathic, an ointment of equal parts of oleate of zinc ointment, and unguentum picis liquidæ will prove useful, and in some cases I have added, with advantage, four grains of cocaine to an ounce of the ointment. Pruritus vulvæ should always excite the suspicion of Glycosuria; it is by far more frequent in the Glycosuria of old adults, than in the declared Diabetes Mellitus of younger women. When due to this cause, or to Leucorrhœa, extreme cleanliness is, of course, to be advocated, and it will generally be relieved by the use of proper internal remedies, and the application of a lotion containing borax:—

℞—Glycerini Boracis ℥ ij
Aquam ad ℥ viij
M ft. lotio

One case, which had long resisted all means devised for relief, got well at once when the vulva was dusted with calomel. In this case, however, there was no diabetes or leucorrhœa or any suspicion of syphilis.

The itching of eczema may generally be relieved by the free use of lotions, containing hydrocyanic acid, 3 to 6 minims to the ounce, or liquor carbonis detergens, 1 to 2 drachms to the pint of lime water, but the greatest relief may be obtained by free sponging, with a decoction of bran. The bran should be boiled in a pudding bag, and the liquor, mixed with warm water, be freely used. In some cases lotio nigra, diluted with an equal quantity of lime water, has proved of great service.

Scabies is a cause of very severe itching, and its treatment often keeps this up. After the acari have been destroyed by the use of sulphur, it should be discontinued, as, if persevered with, its use often developes and keeps up eczema, and the itching dependent thereon.

There is another class of cases in which itching is a prominent symptom, such as icterus, urticaria, and scarlatina, in this last occurring with the outbreak and disappearance of the exanthem.

It has not been my experience often to meet with it in simple jaundice, but several times I have seen cases of gallstone colic, with or without a moderate amount of jaundice, in which the colic has been followed by intolerable itching. One lady, after enduring the misery of sleepless nights, and irresistible temptation to scratch, with the usual result of sores and excoriations, consulted me in the hope of obtaining relief. By the aid of bran bath and the lotio nigra, she obtained some respite from her sufferings, but it was not until she was given half drachm doses of liquor hydrargyri perchloridi and drachm doses of succus taraxaci that she began to make definite progress, and ultimately recovered.

In this case there is no doubt that the presence of bile acids in the blood was the cause of her trouble, but what the morbid agent in urticaria may be is not so well known.

No doubt in the great majority of cases urticaria depends on the presence in the stomach of foods that, ordinarily innocuous, cause the disease in individuals predisposed thereto. The obvious indication is to get rid of the offending material by means of emetics and purgatives, and subsequently to give vinum antimoniale for a few days, in doses of from 3 to 7 minims. Most cases will yield readily to this treatment, but there are others, depending not at all on digestive disturbances, which are most intractable. These usually occur in people of a nervous temperament, and in women seem to be sometimes associated with uterine disturbance.

One lady, herself very nervous, and having a strong family disposition to nervous ailment, such as hysteria and migraine, was brought to me after having for seventeen winters been rendered unfit for all social obligations by the most terrible urticaria. She had been obliged to spend several winters in the south of France, but no medicinal means had availed her anything. The use of hot bran baths and antimonial wine did her much good, but she still remains liable to the disease. Lotions of dilute hydrocyanic acid, three drachms to a pint of lotio nigra, and of hazeline, five ounces to a pint of water, have seemed to do good in some of these cases, but they are very difficult to treat, and tax all the resources of medicine.

LECTURE II.

ECZEMA—ETIOLOGY.

Eczema has commonly been defined as a catarrhal inflammation of the skin, but we attribute such a definite meaning to the word catarrh, and associate it so generally with diseases of mucous membranes, that its application to a widely different disease of the skin is scarcely correct.

We are then driven back to the unsatisfactory necessity of having to speak of eczema as being due to an eczematous inflammation of the skin.

Pye-Smith summarises the pathological anatomy of eczema as follows:—"If a section of eczematous skin be made, the cuticle is found unaffected, the malpighian layer swollen, the papillæ œdematous with dilated blood vessels, and multitudes of leucocytes clustered round them; the deep layer of the cutis and subcutaneous tissues are unaffected."

The prime factor in every eczema is dilatation and congestion of the superficial blood vessels, and upon the amount of this congestion, and on its secondary effects, depend all the varieties of the disease. In skin diseases, in common with many others, the tendency has unfortunately been to multiply names unnecessarily, and the true connection of many conditions has thus been obscured.

Of eczema this is especially true, but fortunately practitioners have ignored names, and treatment has thereby not suffered so much as might have been anticipated.

The congestion may never pass into exudation, and redness may be the only sign of disease. This we call erythema, or eczema erythematosum, and often enough, even without treatment, it may pass away leaving only a little desquamation of the cuticle to tell its tale. Beyond the redness nothing is complained of but a little itching and burning, and if erythema did not often pass into other forms of the disease, it would hardly seem entitled to rank as an eczema.

We see, however, exudation following the congestion, and further developing tissue change, and inflammatory activity of the connective tissue corpuscles; and on the extent of these further changes depends the particular variety of the disease.

Sometimes the erythematous stage is succeeded by the appearance of little red dry elevations called papules. These again frequently remain unaltered throughout their existence, and constitute the disease we call Lichen, or more properly eczema Lichenoides. Their summits may, however, be converted, and finally the whole bulk of them, into vesicles, and the affection then become the common form of the disease known as eczema vesiculosum.

This may seem to begin with a crop of vesicles at once, but there has always been an erythematous stage, however short.

The thin epidermal roofs of the vesicles soon break down from attrition, or from becoming thinned by the pressure of the contained fluid, and we get the characteristic eczematous discharge, the saline constituents of which act as irritants, while its albuminous part stiffens linen, clothes, or bandages in contact with it.

If the eczema is one of a pustular nature, it may follow on the vesicular form, the bases of the vesicles becoming inflamed and their contents pustular; but often the exudation is at once, or nearly at once, purulent, and we get the disease known as impetigo, or more properly eczema impetiginodes.

The pustules, just as do the vesicles, soon break down, and the pus dries into crusts which characterise this form of the disease.

It is common, however, to find all these forms of disease co-existing, and we rarely see a well-marked case of eczema, in which we do not find all four varieties simultaneously.

Besides these four principal varieties of eczema:—

1. Eczema Erythematosum,
2. Eczema Lichenoides or Papulare,
3. Eczema Vesiculosum,
4. Eczema Impetiginodes or Pustulosum,

we get other specially named kinds, which depend entirely upon the course and duration of the four principal varieties, and are called from the appearances they present, eczema madidans or rubrum, eczema squamosum, eczema rimosum and eczema verrucosum.

Eczema madidans or rubrum may result from any of the four chief varieties.

Duhring describes it as being "characterized by a more or less reddish weeping surface, accompanied by marked inflammatory symptoms. Serum exudes freely, and at once forms into crusts; blood likewise oozes forth from the lacerated and exposed corium, which, together with the serum, dries into thick, bulky, dark yellow crusts, completely enveloping the region. These crusts adhere closely and firmly to the part, and unless detached by mechanical means, may remain there indefinitely, the disease continuing its course beneath this mass of effete matter.

"Eczema madidans then may present two appearances,—as it occurs with its crust, and as it exists without this covering. In the one case the skin itself is altogether obscured by a dirty yellowish or brownish crust; in the other the skin presents a bright red punctate wounded surface, deprived in great part of its epidermis, and exuding a clear syrupy yellowish fluid."

It occurs most commonly on the legs, especially of elderly people. It is generally chronic, and involves the deeper tissues, the skin becoming almost leathery.

Eczema squamosum, rimosum, and verrucosum depend upon the amount of thickening of the corium and the rimosum or fissure-type upon its situation, cracks occurring over the flexures of the joints, especially of the fingers, owing to inevitable movements. They present a red scaly surface, and are always associated with a great amount of exudation, which converts the skin into a thick inelastic mass. So long as this thickening persists, the disease cannot be considered as cured, and though the surface may appear normal, any slight disturbance will occasion a fresh outbreak, unless absorption of the exudation has taken place.

It will greatly facilitate the diagnosis and treatment of eczema, if we regard these forms of disease as variations from a common type, rather than as separate diseases.

We have seen that the four principal varieties may present their peculiar characteristics practically from the first, yet they do more often lapse from one into another, according as the inflammation is more or less acute.

Allied as they are pathologically, so are they by their clinical features, which may be summarised as follows:—

1. Unusual tendency to persist.
2. Invariable presence of itching.
3. The fact that when cured they leave no scar.
4. The absence of contagious properties.
5. The evidence of heredity.

A favorite pursuit of dermatologists has been to search for a satisfactory classification of skin diseases, and eczema has, by first one and then another, been classed under this or that head.

The latest writer on the subject, Mr. Tom Robinson, has, I think, wisely and boldly spoken of the eczematous diathesis; but after all it is only a change of name, and instead of the herpetic, or the dartrous class of the French, or the catarrhal diathesis of Hutchinson, we simply speak of eczematous patients as having an eczematous diathesis; but when we come to consider the evidence of this diathesis, we find a list of symptoms alarming, it is true, but not sufficient to include all or nearly all those who have had or may have eczema.

Nor is it probable that we shall find a classification for a disease which varies so much according to its cause, and the constitution of the patient who is suffering from it. No doubt some people are specially liable to suffer from eczema, but there are certainly no sufficient data for predicting of an individual that he has, so to speak, "The mark of the Beast," and will suffer from eczema. It is true the eczematous diathesis is made to cover a wide area, and includes those who in early life are prone to chilblains, to a catarrhal condition of the mucous membranes, and to the advent of some form of irritation of the skin during cold weather.

Diathesis or no diathesis, some people get eczema from causes insufficient to affect others, and these causes are either internal or external; for eczema never occurs idiopathically, as I think it should if it were the manifestation of a diathesis.

Hebra calls the internal causes unknown, and the external causes known. This may be a witty aphorism, but is neither fair nor correct; if it were so, and we had no knowledge of internal causation, we should be powerless to prevent a patient who had once suffered from eczema from a repetition of the evil.

It is difficult indeed, but just as in urticaria we can, by regulation of the diet, often prevent a recurrence, so can we in

a gouty subject prone to eczema, by careful dieting, by the exclusion of alcohol, and the medicinal treatment of the gout, check the tendency to a relapse.

Again, a strumous child who has once had eczema will surely suffer again if his health becomes impaired, no matter how closely he be watched, and how thoroughly irritation of the skin be prevented. We know well enough that general hygienic and medicinal treatment will nearly of a certainty prevent an outbreak.

The known causes are such as produce irritation of the skin, and common among them are parasites, vegetable or animal, especially ringworm, which sets up an eczema that often masks the disease, the presence of dirt, and some medicinal remedies, notably chrysophanic acid and mercury.

Some skins are so tender that flannel will produce an eczema, and for these silk undergarments will be found an efficient substitute.

It must not be forgotten that eczema is not unfrequently set up by the use of badly-dyed underclothing, in which the aniline dyes contain an excess of arseniate of alumina and act as irritants.

People predisposed to eczema usually suffer from it when they are much exposed to cold east winds, and sea air will almost certainly rekindle a half-cured eczema.

Lastly, certain trades, by which patients are much exposed to contact with sugar or flour, will produce special kinds of eczema which are known as bakers' or grocers' itch.

LECTURE III.

ECZEMA: CONSTITUTIONAL TREATMENT.

THE question of the constitutional versus the local treatment of eczema has been debated for more than half a century with varying fortune; now the constitutional and now the local triumphing as the only effectual means of combating the disease. Forty years ago Dr. Hunt wrote: "It is painful to contemplate the unnecessary torments of a patient who has been tarred externally and internally or tortured with caustic for weeks together without the slightest relief, and whom the abstraction of a pint of blood and the exhibition of a smart purgative, would deliver from more than half his suffering."

Again he says: "To prevent the eruption spreading many alterative remedies have been tried with various degrees of success. It is not necessary for me to enumerate them, my whole attention having been directed for many years to one antidote alone, which, under proper regulations, acts with such uniform efficiency as to leave nothing to be desired. That remedy is arsenic."

About the same date Hebra, then Professor of Dermatology in Vienna, to whom the great advances in local treatment are mainly due, wrote: "The insufficiency of the so-called specifics in the treatment of chronic diseases of the skin, and not any spirit of opposition or desire for novelty, obliged me to desire other means of arriving at the desired end." One after the other he discusses the means of constitutional treatment—diuretics, he says, have all proved useless, cantharides injures the patient without curing his eczema, and cod-liver oil, though of the greatest service as a local application, is quite useless when given internally.

Twenty years later he said, of arsenic, that he could not concede to it the undefined blood-purifying and eczema-curing powers which were attributed to it by English and French

physicians, and therefore depended almost entirely upon local means for his undoubted success in treatment.

A very important and interesting discussion on the use of arsenic in eczema was carried on last year in America.

It must be remembered that whereas in England we have a tendency to regard many diseases or symptoms of unknown origin as possibly due to gout, so in America malaria is the cause to which are attributed similar difficulties, and therefore, bearing in mind the influence of arsenic over malaria, we must properly discount the opinions of American practitioners. One or two are as enthusiastic as was Hunt in their appreciation of arsenic, but the general tendency is to deprecate its unvarying use and general application in eczema.

The final propositions of Dr. G. H. Fox, as stated in the Journal of Cutaneous and Venereal Diseases, fairly express the views of American dermatologists of to-day on this subject, *i.e.*, firstly—"There are some forms of chronic inflammatory skin disease, and possibly some affections of a malignant type, in which the internal use of arsenic will undoubtedly exert a beneficial influence."

Secondly—"In most cases of inflammatory skin disease, regulation of the diet, and such hygienic and medicinal treatment as tends to improve the general health of the patient, will do infinitely more good than the continued administration of arsenic."

These propositions, neither optimistic with Hunt, nor pessimistic with Hebra, very fairly express the main opinion of to-day, and would appear to be supported by the observations of Murrell and Ringer, as quoted by Lauder Brunton.

They found that in frogs poisoned by arsenic the cuticle could be stripped off the whole body with the greatest readiness within a few hours after its administration.

Miss Lunn found this condition to depend on softening of the protoplasm of the columnar layer of cells in the epidermis, so that the cuticle remained attached to the dermis only by a few protoplasmic threads.

From physiological considerations, therefore, it would appear that as arsenic causes "increased metabolism in the cells of the epidermis," and therefore causes increased congestion, it would intensify itching and aggravate the symptoms generally of an acute condition.

Practically these results do follow the use of arsenic in acute eczema, and it should therefore be avoided in such a condition. Indeed it may be taken as established that arsenic does harm in acute eczema, and that it is of the greatest utility in the chronic form, where there is much infiltration of the cutis and the epidermis is thickened.

Arsenic may be given in various forms, but should always be taken during or immediately after a meal.

Arsenious acid may be given in a pill, $\frac{1}{30}$th of a grain with 1 grain of the extract of gentian, and increased to $\frac{1}{12}$th of a grain, or Fowler's solution three drops for a dose may be given twice or thrice daily.

If the remedy is doing good, the dose should be increased until as much as ten drops are taken thrice daily.

If our patients complain of colicky pains, and mucous or dysenteric diarrhœa, or if there be irritation of the eyes or running at the nose, the arsenic should be discontinued for a time.

In the sense that there is no specific constitutional treatment for skin diseases, Hebra was no doubt right, and his crusade against the indiscriminate use of arsenic has done much good, by forcing attention to each disease and its treatment on its merits; but his attitude is absurd, and his views extravagant when he speaks of constitutional treatment doing no good.

There are two constitutional conditions or diatheses, the gouty and the strumous, in which internal treatment is invaluable in conjunction with local measures, and I think the tendency of to-day would be to reverse the dictum of Hebra, and to attach all the importance to the internal, and little to the external use of cod-liver oil in strumous eczema.

The skin condition may be due in the first place to local causes, but given a healthy body it speedily gets well; given on the other hand a pale pasty child, whose glands tend to enlarge and become caseous, whose wounds show little tendency to heal, and in whom suppuration rather than resolution is the rule, what is more certain than that the eczema will spread, and, until the bodily condition is improved, will grow worse instead of better under the influence of local remedies, or at best, improve slightly, only to relapse into a deplorable condition?

If Hebra thinks more of the external than the internal use of cod-liver oil, it can only be because the oil not only exercises a beneficial local influence, but is also absorbed. In gouty people nothing is more difficult to treat than eczema—they are particularly liable to eczema of the finger tips, and of all kinds of eczema this is the most intractable, until local measures of some severity have been supplemented by the use of alkalies.

I had recently under my charge a hale but gouty publican, who had been using under medical supervision for more than a year the same remedies with which I was fortunate enough to effect a speedy cure, after assisting their action by the internal administration of iodide of potassium.

With the exception of diseases of nervous origin, such as Herpes Zoster, which tends to get well irrespective of treatment, and pemphigus, which gets well under the influence of arsenic (and even these will benefit from additional local treatment), all skin diseases require local treatment. Whatever their origin, whatever the diathetic condition, the skin itself becomes diseased, and we can influence it best by local treatment, but the most philosophic course, as well as the safest, will be to steer between the Scylla of Hunt and the Charybdis of Hebra, and combine the best of the treatment of each.

For a disease which varies so much in different individuals as eczema, it is out of the question that we should find any specific remedy.

The dry irritable eczema of the gouty drinker will not yield to the same treatment as the pustulating discharging skin of a strumous child; in each case we must observe general hygienic laws, regulate the bowels, order a suitable diet, and to our local measures add the special internal treatment the diathesis demands. Nothing is better than iodide of potassium in small doses for a gouty eczema, or cod-liver oil for the strumous form.

While there is no internal specific, some remedies, as we have seen with arsenic in the chronic form of eczema, do seem to have a special influence on the skin.

Piffard, a modern American authority, recommends the use of calx sulphurata and viola tricolor in eczema.

In eczema rubrum, especially in infants and children with

much soreness and irritation, calx sulphurata, in small doses, grain $\frac{1}{10}$th to grain $\frac{1}{5}$th, he considers often proves of great service.

"Again, in cases in the second stage, when the exudation is abundant and purulent, it should be given in larger doses, grain $\frac{1}{20}$ for children to grain $\frac{1}{5}$ for adults. Thirdly it may be used with very manifest advantage when the patches of eruptions are greatly infiltrated, and the inflammation is of a subacute character. If the effects of the drug are not evident at the end of two weeks, it will not be worth while to continue the drug longer."

The infusion and fluid extract of viola tricolor have been found of use by French and American dermatologists; it increases the amount of urine, and the total quantity of solids excreted with it; but it is rather in virtue of its depurative action that it has been found useful in eczema. It is in cases of eczema capitis in children, with formation of pustules, and tendency to become chronic, that its use is indicated. If the eruption be acute the dose should be small, if chronic or indolent the dose may be increased.

One drop of the fluid extract two or three times a day is enough for an infant, whereas for an adult it may be given in doses of from 5 to 60 drops thrice daily.

Before leaving the subject of constitutional treatment, it is necessary to refer to a procedure which has been practised by Mr. Lawson Tait and Dr. Kidd, a leading homœopath, in some cases of general eczema in young children, which had resisted a prolonged course of general treatment, namely re-vaccination.

Perhaps with a conscientious desire to be a consistent homœopath, Dr. Kidd recommended this course, the principle of *similia similibus* suggesting the remedy, since the disease was supposed to have originated from the first vaccination.

In all the cases recorded, three, I think, the result was most successful, and one can only wonder that so speedy and easy a cure is not more often resorted to, or at least, that successes and failures in the process have not been more often recorded.

Personally I have no practical experience of this method, and should as soon think of putting a child into a fever ward as vaccinate it in order to cure eczema.

It is well known that any general febrile disturbance, dependent upon an exanthematous cause, will for a time suppress the evidences of eczema, which will recur when the exanthem is recovered from. The re-appearance is, however, not constant, the eczema is sometimes lost with the other disease, and ceases to affect the patient. To some chance, such as this, I think it more reasonable to attribute improvements after vaccination, rather than to vaunt an isolated success as a triumph of principle. Nothing is more common than for a doctor to be asked if vaccination has not been responsible for the eczema which followed it. Never was the *post hoc propter hoc* argument more specious. Most surely eczema does often follow vaccination, but it is no more caused by it than it is by indigestion. They both, without doubt, try the strength of an ailing child, and make it ripe for the outbreak of any disease to which it may be predisposed, but to be causative, in the real sense of the word, they have no claim.

A very interesting and important question has been raised as to the propriety of healing completely a discharging eczema, and the fear of driving in the disease has often deterred practitioners from effecting a speedy cure.

Hebra and his school laugh at this idea, and no doubt in the majority of cases with good reason.

The question at issue, whether an habitual discharge may be suppressed without danger to a patient, depends, I think, upon the patient, and not on the disease.

I attended a child who had lost two young brothers from acute tuberculosis. He had a very extensive eczema of the scalp and face, but otherwise appeared in good health. Under appropriate remedies his eczema rapidly got well, but its disappearance was attended with all the signs of acute hydrocephalus, from which he soon died.

With the family disposition to this disease, it is not unlikely that the child might have succumbed to tuberculosis, had the eczema not been cured; but I fear my treatment was injudicious, as the child's disposition to disease, of a special and serious kind, was not taken into account.

Many experienced practitioners, I know, hold this view, and use the seton to keep up a slight but harmless irritation where a long-standing discharge, as from pustular eczema is

being suppressed. There is not any harm likely to be done by this, perhaps, indeed, much good, but I think it will be found sufficient if we keep the bowels acting rather more freely than is absolutely demanded by the requirements of an ordinarily healthy condition. For this purpose I combine with anti-eczematous treatment small doses of calomel, and have no reason to regret this practice.

Analogies of the impropriety of rapidly suppressing habitual discharges are common enough. Hæmorrhages from the lungs or stomach occur often enough, when hæmorrhoids, which have been bleeding for years, are suddenly cured, and I have seen cases in which cerebral hæmorrhage has seemed to follow rapid cure of an old ulcer. I am not prepared to argue a *post hoc propter hoc* relation, but it is one which appeals very forcibly to the lay mind, and we are bound to consider it; certainly the attitude of those who laugh at the notion of metastasis, because they have seen no cases, is not to be commended.

Specialists rarely see their cases from start to finish, and it is to the general practitioner and not to the specialist that we must look for a solution of this problem.

LECTURE IV.

ECZEMA: LOCAL TREATMENT.

The question of the propriety of local treatment having been settled, we are met at starting by the two questions—What do we expect to obtain by local treatment? and by what means may we attain our end?

To the solution of both these questions, Dr. Unna, at the recent meeting, in Dublin, made very important and satisfactory efforts.

Hitherto in dermatology clinical skill has furnished the basis of practice in a spirit of the purest empiricism; but now the axiom of Hippocrates that "Law rules all things," has, to some extent at least, been supported by the recent work of Unna and others in the field of dermal therapeutics.

As was to be expected, a thorough knowledge of the structure and function of the skin is at the bottom of this development.

For the purposes of this lecture one need refer only to the horny epidermis, and the superficial vessels, ready, under the slightest irritation, to become congested, and furnish in excess materials for the manufacture of the three main products of the skin. These are:—

1. The watery vapor or insensible perspiration,
2. The fluid watery sweat,
3. The fatty sweat.

The watery vapor constitutes $\frac{3}{5}$ths of the whole of the watery evaporation from the skin, and if suppressed, as by a hot bath, is compensated for by the increase of the fluid sweat, which can, as we shall see, be used for softening the horny layer.

The fatty secretion can be restrained by the permanent water bath, a method of treatment with which we are not familiar in England, and which has, I believe, been used in Germany only in extreme cases of burns and intractable in-

stances of Pityriasis Rubra, but the result has not been such as to justify enthusiasm for the means. On the other hand the fluid sweat can be easily restrained by means of inunction of fat, and to an even greater extent by the use of air and water-tight materials, such as gutta percha or india-rubber. Not only by these means does the subjacent skin become saturated with water, but the normal proportion of fat and water becomes disturbed, and the fat becoming relatively less, one of the main obstacles to absorption by the skin is diminished.

In the commoner skin diseases we have on the one hand, either lying under a normal or only slightly hypertrophied epidermis, a focus of disease which we desire to reach, or as in Psoriasis, an enormously increased epidermal mass which prevents the absorption of our remedies. On the other hand a great portion of the epidermis may be absent, but what remains is so swollen and distended with the products of inflammation, and the centrifugal tendency is so pronounced owing to excessive secretion, that the possibilities of absorption are reduced to a minimum. To this class belong weeping eczema and impetigo.

In the first class of cases, in which we seek to procure absorption of our drugs, and the normal or hypertrophied epidermis is the obstacle, we have recourse to measures either mechanical or chemical. By chemical means we can reduce the mass of fat-laden epidermis, and so get our remedies absorbed. McCall Anderson has popularised in England the use of caustic potash for this purpose; to Hebra we owe the similar use of sapo viridis, or potash soap; and to Unna the recent introduction of salicylic acid for the same purpose is, I think, due.

Anderson, in his treatise on eczema, and again in his recent work on skin diseases, advises the use of potash soap in the following manner:—"If the infiltration is slight, or the rash extensive, soft soap should be used. A piece of flannel, dipped in a solution of it, should be rubbed as firmly as possible over the affected parts night and morning, and the solution allowed to dry upon them; or a piece of flannel wrung out of the solution may be applied to the part, and left in contact with it all night, if the patient can bear it.

"A more elegant preparation is liquor potassæ, which may be painted over the eruption once daily with a large brush,

its irritant properties being neutralized by means of tepid water, if the smarting becomes excessive.

"Instead of soft soap or liquor potassæ, solutions of potassa fusa may be used. In the mildest cases, with only slight infiltration, two grains of potassa fusa—in the more severe, five, ten, twenty, thirty grains, or even more—in an ounce of water may be employed; but I rarely resort to a stronger solution where the eruption is extensive.

"Even the solution containing thirty grains to the ounce, which may be applied in the same way as liquor potassæ, must be used with great caution, and soon washed off with water, and the application should not be repeated oftener than once daily at the most.

"When such a strong solution is prescribed, and especially if the eruption is extensive, it is advisable for the physician to apply it himself, at first at all events; and in no case should it be used so strong, or allowed to remain on so long, as to produce any manifest destruction of the skin."

In cases of eczema sclerosum, Hebra used a solution of one drachm of potassa fusa in two drachms of water, in the following manner:—"After the accumulated masses of dead epidermis in the form of scales, crusts, etc., have been removed by appropriate means, so as to expose the subjacent red, infiltrated, moist surface, the solution is applied with a charpie-brush, passed quickly and evenly backwards and forwards over the affected part in every direction; then the hand or a piece of flannel is to be dipped in water, and with it the lotion spread more equally still over the whole surface. A white froth, not unlike soap suds, will soon be observed to form on the eczematous patch; and this only occurs when water is thus rubbed in after application of the caustic solution.

When this part of the process has been thus finished, a considerable quantity of fluid exudes in drops upon the surface. To allay the pain, and to prevent the formation of scabs, rags dipped in cold water should be applied, and frequently changed during the day.

The patient need not be disturbed during the night, if care be taken that the rags are kept wet, and this is best done by help of oil silk or gutta percha.

"After water dressing has thus been constantly applied for

a week, the minute raw places of greater or less depth, which the caustic application has here and there produced, will have recovered their epidermis, and the itching, which has quite ceased during this time, will again become troublesome. Moreover it will soon be observed that red spots re-appear here and there, and vesicles are seen; this should lead to a repetition of the former procedure. When the water-dressing has entirely removed the traces of the second caustic application, a third should follow, and this weekly course of treatment should be repeated as often as the symptoms just mentioned return. It is scarcely ever necessary for the solution of potash to be used more than twelve times, even in the most severe cases; for even if after this a few small places should show a disposition to relapse, some more gentle treatment will suffice to prevent it."

This very drastic treatment is of course only necessary in the most obstinate cases; but I have found it of the greatest service in cases of long standing dry eczema of the fingers, especially when the application has been followed by the use of a two-grain solution of acetate of lead in an ounce of lime water. This should be used on rags soaked in it, and evaporation prevented by a covering of oil silk or gutta percha tissue.

In the not unfrequent cases of callosities of the palms of the hand or soles of the feet, a milder treatment is effectual. Either lumps of sapo viridis may be put on the places and bound firmly on with bandages, or the spiritus saponis alkalinus of Hebra may be rubbed firmly in twice a day. This is prepared by putting four ounces of sapo viridis into two ounces of spiritus vini rectificati, and filtering after twenty-four hours. It should be well rubbed in with a sponge previously dipped in hot water. A good lather will be produced, and should be allowed to dry in.

I have obtained good results also in these cases by painting on the following preparation with a camel's-hair brush:

Salicylic acid, 30 parts;
Ext. cannabis Indicæ, 5 parts;
Collodion, 100 parts.

Incidentally I may mention that in a few cases of warts that have resisted all other treatment, this preparation of salicylic

acid has brought about a cure; but in others its use has been followed by failure. In other cases where the infiltration is not excessive, and the horny layer not greatly increased, Unna prefers to proceed by means of what he calls plaster mulls.

These are made by spreading the medicament employed on a sheet of gutta-percha tissue, which is incorporated with a sheet of mull, undressed muslin. Adhesion of the drug to the skin on the one hand and the mull on the other is secured by the addition of some substance, such as the purest india-rubber or purified oleate of aluminium. These are both indifferent to the skin, and cause the plaster, drug and skin to stick together. By this means a large amount of the drug employed is brought into direct contact with the skin, while its absorption is facilitated by means of the impermeable covering. The watery sweat cannot escape, and saturates the diseased part, while the fatty sweat which forms the chief obstacle to absorption becomes relatively less, and absorption takes place freely and easily.

By these means the first difficulty of procuring absorption of drugs is overcome, and these methods are of the greatest value in all chronic cases such as eczema squamosum, lupus or indurated acne. The glycerine gelatines are of use in cases of acute eczema, erythema or diffused eczema with much discharge, especially when the horny layer is wanting and its fatty matter deficient. Here our object is to procure the absorption of the secretions, and dry up the mass while the epidermis has time to be reformed. For this purpose rice powder may be used, but the gelatine compounds are especially serviceable. They permit the escape of the insensible perspiration, so no objectionable results to the lungs or kidneys occur. They cause no distress to the patient, and protect the affected parts from exposure to the air and contact with injurious substances. They are prepared by mixing gelatine and glycerine in definite proportions with the addition of the medicament desired.

A sufficient quantity of the compound is melted in a water bath or in a spoon, and painted on the part affected with a brush. It soon dries, and may then be covered with a bandage where friction by the clothes may disturb, but on the face it need not be covered; and as it is barely noticeable, will be of

inestimable value to people who have facial eczema, and still may have to be engaged in business. According to Unna, the glycerine gelatines are of the greatest utility as auxiliaries to other dressings.

Besides effecting the cure of inflamed surfaces, they ensure rest, immovability, and, if covered by bandages, an increased compression. In the case of ulcers of the leg, it is of great advantage to paint the healthy skin thickly round the sore with zinc gelatine, and then to bind the whole of the leg firmly with a double-headed bandage. Under this bandage the accompanying eczema heals, the varicose veins improve, and the patient cannot possibly do himself any harm by scratching.

For the better class of patients I feel sure these methods will in time be universally adopted, but motives of time and expense will prevent their universal adoption amongst our poorer patients, and for these we must consider how to use the lotions, powders, and ointments of our pharmacopœia.

In the choice of remedies we are guided firstly by the stage of the disease, by its acuteness or chronicity, and secondly by its situation. If acute, our object is to soothe and allay irritation, to prevent, if possible, exudation, and so check the further spread of the disease. For these purposes we have to apply sedative drugs, and above all to exclude all external irritants. Of these the commonest are air and water. If the stratum corneum be absent, the soft and succulent cells of the rete malpighii rapidly absorb water when in contact with it, and so become swollen and burst, with the production of increased redness, swelling, and irritation.

It is always advisable for a patient with eczema in the erythematous or vesicular stage to abstain altogether from the use of water. If, however, its use be insisted on despite advice, it can be rendered less harmful by the addition of a little glycerine or common salt.

More harmful than water alone is soap and water. To say nothing of the inevitable friction, soap is prejudicial from its composition. It always contains an excess of free alkali, whether soda or potash, and therefore acts as an irritant. Moreover, it combines with and removes the oily matter of the skin, which is rendered dry and harsh. For this reason ordinary soap is most objectionable in eczema, and indeed its use ought to be interdicted amongst all who have a tendency

thereto. Eczematous patients, even when well, commonly have dry rough skins; and a very little extra dryness, such as that caused by exposure to wind or over much washing, often starts a fresh outbreak of the disease.

In my experience medicated soaps do very little more good than those in common use—they all do harm on account of their free alkali depriving the skin of its oily protection. To meet this difficulty, Unna suggested what he calls an over fatty soap, which contains four per cent. of unsaponified oil.

Mr. Perry, chemist, of the Hagley Road, has made a similar soap for me, which will, I think, prove of great value to people predisposed to eczema, and to those whose skins are dry and harsh owing to a deficiency of fat. This soap will minimise the evils of washing in cases of eczema, and to that extent will be useful; but it is rather in the prevention than in the cure of eczema that its very great value lies. Though we owe much to Unna for his other preparations, this soap is, I believe, destined to prove the most useful of them all.

The glycerine gelatines, especially those containing lead or zinc, best serve our purpose in treating acute eczema, for they offer a protection against external irritants, and at the same time encourage absorption of the watery products of inflammation, while the fatty ones are stored up and help in reforming the thinned or lost epidermis. Though very little absorption of drugs is possible when used in this combination, very little is needed—we have only to allay the symptoms, to diminish congestion if the disease be only erythematous, and to dry the skin if the eczema be of the weeping variety.

We may gain our ends also by the use of powders and lotions, especially such lotions as deposit powders when drying up.

Of powders, simple rice powder, powdered starch or talc, answer very well, whether used alone or in combination with zinc oxide or oleate, which exercises a slightly astringent action. To these camphor may conveniently be added, if there be much itching; and a useful formula is the following:

℞—Zinci oxidi.
Pulveris amyli āā ℥ss
Camphorae gr. 20.
M. S. to be used as a dusting powder.

Care must be taken, in using powders, not to allow them

to cake on the skin or become worked into a paste, especially in the intertrigo of young children.

Lotions should be applied on rags soaked in them. These should not be too thick, and should never be covered with gutta-percha tissue to prevent evaporation, for they do good partly by evaporation and partly by the powder they leave on the skin.

To promote this end they should contain a little glycerine, which, as Bulkeley points out, facilitates the adhering of the powder, and keeps the parts supple.

Some lotions are particularly valuable in the first and second stages, when the vesicles are just rupturing, and the irritation and itching are at their height. One of the most valuable of these is lotio nigra, which must of course be shaken before being used.

Among other useful combinations are the following:

℞—Plumbi acetatis
Zinci sulphatis, āā gr. 40.
Liq. carbonis detergentis, ʒ ij.
Glycerini, ℥ j.
Aquam calcis ad. ℥ xx.
M. ft. lotio.

℞—Acidi boracici, ʒ v.
Acidi hydrocyanici dil. ʒ ij.
Glycerini, ℥ j.
Aquam ad. ℥ xx.
M. ft. lotio.

It is easy to multiply prescriptions for lotions, but as a matter of practice one gets into the habit of using only a few remedies, and indeed the most important part of successful dermal therapeutics lies not in the number of remedies which one can employ, but in a recognition of the right time to use them—when, that is, to encourage or check transudation through the skin by the use of lotions or ointments; and at the risk of wearisome iteration it is necessary again to emphasise the necessity of using lotions or powders in the acute conditions, and ointments in the chronic.

With respect to the above-mentioned lotions, it is important to bear in mind that some skins tolerate tar preparations very badly, whereas others are irritated by the use of glycerine.

To some extent, then, the use of our lotion is experimental, and it is wise to begin with small quantities of the liquor carbonis detergentis, which is a patent preparation of Wright's, and generally very much relieves itching, but sometimes causes a good deal of burning pain.

When the disease is in the stage of pustulation, and a good deal of pus is exuded, and scabs are freely formed, oily preparations are of most use. Here again the tarry oils must be used with great discretion, as though invaluable they are apt to inflame some skins if used in too great strength. It is well to combine them with cod liver oil, or castor oil, or olive oil, as in the following prescriptions:

℞—Olei cadini, ʒ iv.
Olei morrhuae ad. ℥ iv.
M. ft. lotio.

℞—Olei rusci, ʒ iv.
Olei ricini, ℥ j.
Olei olivæ, ℥ j.
M. ft. lotio.

A patient preparation of this kind of is the so-called linimentum plumbi lactatis co, which perhaps is the best of the oily remedies in use.

A drug I have been using lately with the greatest advantage is the Oleum Deelinæ. This owes its name to the Dee Oil Company, who prepare it. I prescribe it in the following combination, varying the strength of the prescription as the patient becomes tolerant of the oil.

℞—Olei deelinæ, ʒ j.
Olei ricini, ʒ ij.
Olei olivæ, ʒ iij.
M. ft. lotio.

It is a little known preparation, but invaluable. In common with all oily preparations, it is used by spreading lint soaked in it on the diseased part. Lotions can be used easily in the daytime; but, unless they are constantly renewed, the lint saturated with them soon becomes dry. For this reason they are difficult to use during the night, and it is then that the oily preparation may be used with advantage.

Ointments may be used towards the end of the second

stage of eczema, when the very profuse serous discharge has ceased and there is a tendency to the formation of crust, and some slight exudation into the skin; but they are especially valuable in the chronic form of the disease when the skin is thickened and leathery. They are of use in proportion to their power of excluding irritants, and to the ease with which they are absorbed. Both of these ends, as mentioned before, are best served by the use of Dr Unna's plaster mulls, but we may to some extent gain the same end by covering lint, spread with ointment, with gutta-percha tissue.

The number of ointments is legion, but as a matter of fact no practitioner uses more than two or three. Most others use zinc ointment, or, preferentially, that made with the oleate of zinc.

If there be much itching, it is wise to add half-a-drachm of carbolic acid to each ounce of this. If the case be obstinate, and if there be no long-standing venous engorgement as from varicose veins, a useful preparation can be made by mixing the zinc ointment with the ung. picis liquidæ of the Pharmacopœia in the proportion of 6 to 1. If this amount of pitch be found to be tolerated, the quantity may be increased; but it is wise to be careful with it, especially in elderly people. Young plump skins seem to tolerate tar much better than the old and shrivelled.

Of mercurial ointments, that made with the oleate is I think best. It is commonly made of the strength of 5 or 10 per cent., and should of course be used with discretion. It will be found a very valuable adjunct to the internal treatment of syphilitic sores, especially if a little morphia be added to the ointment.

The difference this addition makes is almost incredible; like many good things it comes to us with the sanction of long years, for it was freely and successfully used in Naples before the days of mercury. Chrysophanic acid ointment must be carefully avoided in acute eczema—it does little if any good in the chronic form, and is occasionally very prejudicial if too freely used on the head.

The influence of the localization of the disease on its management is sometimes considerable. This is especially true in eczema of the scalp, owing to the sticky exudation matting the hair together, and to the free discharge of pus. It is im-

possible to get to the seat of disease without removing the hair. This may be best done by clipping it close to the scalp. Very frequently, in hospital practice, these cases are seen to be due to the presence of pediculi, which must, in the first instance, be got rid of. This can be done by washing the head with equal parts of petroleum and olive oil. Then the crust must be removed, but often at the expense of much time and trouble.

The head should be saturated with olive oil, and after a few hours the scalp should be washed with soap and warm water. This will probably get rid of the crusts, and then oleate of zinc ointment should be freely rubbed on the surface.

The ointment should be renewed once or twice daily, and crusts or old ointment removed whenever discovered.

This form of eczema commonly occurs in delicate or strumous children, and the internal use of cod-liver oil is of the first importance in the treatment. They soon do well if, after the first washing, no more water be used, and the ointment be thickly applied.

When the discharge ceases, and the scalp remains dry and scaly, it is well to add a little unguentum picis liquidæ to the unguentum zinci, or better still to use the oleum deelinæ, in the proportions mentioned before.

For a similar dry eczema of the scalp, in which some irritation is associated with excessive formation of scurf, Piffard recommended the use of the following preparation—

℞—Acidi salicylici, grains x to xx.
Ol Lavandulæ, ℥ iijss
Ol Citronellæ, ℥ ss
Ol Pini Sylvestris, ℥ ij
Ol Ricini, ℥ jss
M.

In this preparation the salicylic acid is designed to restrict the formation of scales, the oil of the pinus sylvestris acts as a stimulant, and the castor oil to correct the drying effects of the latter. The best way to apply the oil is from a small oil can. The hairs having been separated a few drops are applied directly to the scalp, and gently rubbed in with the finger. The application must be made daily at first, but afterwards at longer intervals.

Eczema of the hairy portion of the face may be treated like eczema of the scalp, provided there be no formation of pustules and infiltration of the skin. In the latter cases every hair on the affected part must be pulled out. As a rule they come out easily, as their attachments to the follicles have been loosed by inflammation. Zinc ointment must be rubbed on, and, according to Pillard, calx sulphurata, in doses of grain $\frac{1}{10}$th to grain $\frac{1}{3}$th administered twice daily.

Eczema of the scrotum is characterised by great itching and extensive infiltration, and its treatment is most difficult, owing chiefly to the dependent position of the part. The scrotum should be supported by a suspensory bandage, the bag being made of, or lined with, india-rubber. This, of itself, often causes marked improvement, but if our patient will permit it, it is next advisable to scarify the scrotum and let blood flow freely. The patient should sit in a tepid bath to encourage bleeding, and after drying the parts a little tincture of benzoin should be applied. The scarification will have to be repeated in a week or two. If this procedure is objected to, a solution of liquor potassæ must be applied as before directed, and after the irritation has subsided, zinc ointment is to be rubbed freely on.

Eczema of the legs, if chronic, is best treated by the use of Unna's impermeable dressings, but if associated, as so frequently happens, with varicose veins, may be cured by applying zinc ointment spread on lint, and covered with one of Martin's bandages. If the condition be sub-acute it is best to apply linen soaked in boracic acid, and covered with gutta percha tissue, or sometimes merely rags, saturated with the linimentum plumbi lactatis co.

Of course a very important part in the treatment of these cases consists in the maintenance of the horizontal position. It is best to keep the patient in bed, and to get rid of the weight of the bed clothes by means of a cradle.

Eczema intertrigo, which so often occurs in fat young children or obese adults in the fold of the groin or beneath pendulous breasts, should be treated by dusting on oleate of zinc and starch in equal parts, with the addition of a little tannin, if there be much secretion.

Eczema of the nipple has assumed much importance since the publication of Sir James Paget's paper on the subject in

the St. Bartholomew's Hospital Reports for 1874. He drew attention to "a disease of the mammary areola preceding cancer of the mammary gland." He described the condition of the skin as resembling chronic eczema in certain features, with an intensely red raw surface, very finely granular, giving rise to a copious, clear, yellowish, viscid exudation; the sensations were commonly tingling, itching, and burning.

In some of the cases the eruption presented the character of an ordinary chronic eczema, with minute vesications, succeeded by soft moist, yellowish scabs or scales, and a constant viscid exudation. In some it was like psoriasis, dry, and with a few white scales slowly desquamating. In both these forms, says Paget, I have seen the eruption spreading far beyond the areola in widening circles, or with scattered blotches of redness covering nearly the whole breast. This is not a true eczema, but probably a slowly advancing cancerous change near the mouth of the lactiferous ducts, which at a very early stage leads to irritative effects on the superficial tissues of the nipples and surrounding skin, and eventually penetrates into the substance of the mammary gland. The diagnosis is difficult, but if the disease does not yield soon, as would an ordinary eczema, to general treatment, its true nature should be suspected.

Eczema is very often set up by and associated with scabies, and must be specially treated after the acari have been destroyed, but as will be seen later, ought not to be confounded with that disease. Generally speaking the modern and wide definition of its name renders its diagnosis easy, nor with the exception of a few cases of squamous eczema ought there to be any difficulty in its recognition. I have drawn largely on the literature of the subject, but am especially indebted to the writings of Unna, Piffard, Duhring, Bulkley, Hebra and McCall Anderson.

LECTURE V.

PSORIASIS.

Next to eczema and scabies Psoriasis is the most common of skin diseases. The frequency of its occurrence renders its diagnosis a matter of importance, while the difficulty of deciding, in exceptional cases, whether we have to deal with eczema squamosum, a squamous syphide or simple psoriasis makes it necessary to carefully review its pathology, its ordinary situation and clinical characteristics. A simple case cannot be mistaken for anything else, but every now and then we meet with cases which require the utmost care in diagnosis. It may be defined as a disease of the skin which is chronic, usually relapses, is symmetrical in its localizations, and is associated with the formation of profuse quantities of silver grey scales, which can be removed readily by the finger nails, upon more or less large reddened parts of the skin, which are elevated to a trifling extent.

The pathological element in psoriasis is great enlargement of the papillæ, with marked distension of the blood vessels of the skin. Neumann found the papillæ elongated twelve to fifteen times the normal, their tissue infiltrated with round cells, the coils of vessels dilated in some places, narrowed in others; in the upper parts of the cutis the bundles of connective tissue are broader than normal, and the dilated vessels surrounded by proliferated round cells. Upon the areas of enlarged papillæ are formed in excess the epidermal scales which give to psoriasis its clinical characters.

At first the collections of scale are discrete and punctiform. They soon increase in size, and constitute the common form of the disease known as psoriasis guttata, in which the body is more or less covered with white raised scaly spots more or less widely separated from each other by healthy skin. These increase at the periphery and form masses of varying

size often running into each other, and, according to their arrangement, giving names to different varieties of the disease. These varieties do not, as in the case of eczema, vary in their pathological anatomy, and there is no object in specially naming them. Locality has very little influence in modifying the appearances; only when the disease affects the scalp and nails does psoriasis require special description.

On the scalp it occurs in irregular streaks of eruption, very closely resembles seborrhœa sicca, and, if unaccompanied by general psoriasis, is difficult to diagnose. There is no discharge as in eczema, nor are the hairs so much matted together.

The nails are thickened at the free edges, of a dark yellow or brown color, lustreless, laminated and brittle. They often break away in patches, leaving portions of the matrix uncovered.

The disease commonly breaks out simultaneously at several points, but almost invariably the backs of the elbows and fronts of the knees are the first parts to suffer. It may occur anywhere, but chooses especially parts where there has been pressure, as from garters or a belt. Patches of psoriasis tend to disappear, leaving only a pigmented surface; but unless treatment is adopted and persevered with, the body is rarely altogether free from the eruption. It is not only chronic but relapsing, and, like many other skin diseases, has a tendency to reappear every spring and autumn.

If it occur on the face, its unsightliness is a sufficient reason for treatment, but otherwise, as no symptoms beyond more or less itching are complained of, it will often be found to have existed for years before it is brought under medical notice.

No organic disease or visceral disturbance is constantly associated with it, and indeed those who suffer from psoriasis commonly enjoy robust and vigorous health. As to its causation, nothing definite is known; it occurs among the rich equally with the poor. It is associated with no diathetic disturbance, and beyond a strong probability that it is hereditary its etiology is a blank. Recently it has been added to the victims of the all-devouring bacterial pathology, but as yet neither has its course been modified, nor its treament altered thereby.

In determining whether a rash is simple psoriasis or a squamous syphide, there is, as a rule, no difficulty. The history of the patient, the position of the rash, concomitant signs of syphilis, or their absence, render the diagnosis easy.

Sometimes, however, we are met by cases which almost baffle correct diagnosis, and in view of such, it is important to have a clear idea of the difference between the two diseases.

Fournier, the great French Syphilographer, has drawn up the following scheme of distinction:—

1. *The Volume.*—In papulo-squamous syphilide the eruption is characterized by papules, generally small or of medium size, while in psoriasis they are large, unless in psoriasis guttata, and frequently form extended plaques.

2. *Color.*—In syphilis the papules are of a dark red, often of a characteristic raw ham color. In psoriasis they are rose colored, or at least of a lighter red. Still both diseases have often quite a similar color.

3. *Desquamation.*—Here we have a marked difference. Syphilitic papules are slightly and only partially squamous, often being free from scales over a large portion of their surface, and the scales are thin, small, superficial and grey. In psoriasis, on the contrary, they are abundant, the scales cover the whole or greater part of the papule or psoriatic patch; they are large, thick, heaped-up, stratified, white and form a laminated covering, often a true epidermic carapace.

4. *Results of Scraping.*—In a papulo-squamous syphilide the papules do not show, upon scraping with the finger nail, the micaceous striae and the candle grease drop (*tache de bougie*) which is characteristic of psoriasis, and pathognomonic when well marked.

5. *Consistence.*—The hardness of the papule is what I call the sign of the blind. In syphilis the papule is resistant to the touch, hard, and gives the sensation of a foreign body inserted beneath the epidermis, and recalls the parchment induration of the chancre. In psoriasis we find the skin simply thickened, but without hardness or true resistance.

6. *Localisation.*—In syphilis there is no characteristic localisation, no point of predilection, except for the palmar and plantar varieties. In psoriasis we find, in the great majority of cases, the curious localisation on the knees and elbows, which is truly characteristic.

7. *Treatment.*—While syphilis is in general rapidly modified by mercury, psoriasis is no wise affected by its use.

8. *Duration.*—In a large number of cases the duration of the eruption is an excellent sign. In syphilis it is short in comparison to the habitual persistence and chronicity of psoriasis, and scarcely ever exceeds a few week or months; while in psoriasis it remains for months and even years; the eruption is always chronic, and this chronicity is often of itself a characteristic sign.

9. *Antecedents.*—In the syphilitic contamination can usually be found, if carefully sought for, traces of the early lesions being generally discoverable; often the papulo-squamous lesions coincide with other secondary manifestations, such as mucous patches, alopecia, etc. Nothing of this kind exists in the psoriatic, unless the two diseases be present at the same time.

The treatment of psoriasis differs so widely from that of eczema that a diagnosis must be made with as much certainty as possible before treatment is commenced. As is the case with syphilis, no difficulty as a rule occurs in deciding the disease we have to deal with, but occasionally also it is next to impossible to make up one's mind. Patient's statements are so unreliable that but little value can be attached to them: were it otherwise, the fact that a chronic eczema has nearly always at some time or other been associated with a moist exudation would suffice to establish a diagnosis; for psoriasis is always and completely dry. It is always chronic and relapses with almost mathematical precision and certainty; eczema is often acute or sub-acute, and when chronic, has been acute as a rule, at the beginning; psoriasis affects the thicker parts of the skin and the most exposed regions, such as the knees and elbows; psoriasis affects the extensor aspects of joints, eczema the flexor aspects; psoriasis the parts which sweat but little, eczema those in which perspiration is common: psoriasis has always the same aspect, eczema is protean in its appearances.

The difficulty of distinguishing between these two diseases arises most frequently when we have to deal with a squamous affection of the palms and soles. This may be due also to syphilis, and while a correct diagnosis is important, it is also most difficult. Of course it is easy enough when there are other evidences of one of these diseases, but if the palmar

eruption stand alone, we shall be right probably six times out of ten if we treat the case as eczema, three times if we regard it as syphilis, and only once if we call it psoriasis.

Treatment.—When once we have made up our minds that we have a case of simple psoriasis to deal with, the treatment is easy enough. In the first place we must get rid of the scales, for no local application can do any good when applied on the top of a mass of dead epidermis. Our patients therefore should be directed to take a hot bath, and scrub themselves well with soft soap and a good stiff nail brush. When dry, the ointment considered most suitable should be well rubbed in. The local applications which, up to recent times, have been considered of most service in psoriasis are the tarry preparations; either the unguentum picis liquidum, or oleum cadini, or oleum Rusci.

Balmanno Squire some few years back suggested the use of chrysophanic acid, or chrysarobin as it is now more properly called. This is the active ingredient of Goa powder, and is used by Indians and Brazilians in the treatment of skin diseases.

The Indian mode of using the drug is to cut a lime fruit, dip it in the powder, and dab it on the affected part. The Brazilians mix it with vinegar, and so apply it, or use it as an ointment. In the latter form we find it most convenient for use, and I commonly make the ointment of the strength of ten grains of chrysophanic acid to an ounce of vaseline. Some use it in much greater strength, a drachm to the ounce, but I think it unadvisable, as, especially in recent cases, some skins are very intolerant of the action of chrysarobin.

If the disease be limited in extent, no local treatment can be so good as the use of Unna's plaster mulls, containing from 18 to 45 per cent. of chrysarobin. By their means free absorption takes place, and we can overcome the great objection to the use of chrysophanic acid, namely, the inevitable discoloration of linen and underclothing. These plaster mulls are expensive, and Messrs. Southall, of Birmingham, have made an effort to provide an efficient substitute. They have made a mixture of the drug, gelatine, and glycerine, and water in definite proportions, forming a mass which can be dissolved by gentle heat, and applied by means of a gum brush. When applied it soon dries, and whilst drying should be covered with cotton

wool or charpie, which forms a tissue containing the drug and adhering to the skin, whilst the clothes are, to a great extent at least, spared from staining.

The oil of cade should be used in cases of psoriasis of the hairy scalp, and rubbed in once or twice daily; but for other forms of the disease, except in my experience in one case only, the tarry preparations are not comparable in their good effects to chrysophanic or pyrogallic acid. They are unpleasant to use, and not so efficacious. If the bases of the eruptions are very red, irritable, and itch a great deal, we had better discard the chrysophanic for pyrogallic acid. Practically this means use pyrogallic acid in acute cases, since the older forms of the disease do not itch much.

Pyrogallic acid may be made into a good application by mixing with vaseline or lanoline, 20 or 40 grains to the ounce being used; but it should be employed with caution and its effects carefully watched, as sometimes its constitutional effects are very alarming. It should therefore be used only over a small area, and its effects watched. In nearly every case, however, we may safely use chrysarobin.

The most important part of treatment is the internal administration of arsenic. Its use alone, with the aid of soap and water, will get rid of the disease for a time, though it is better to combine it with local treatment; but even if we continue using arsenic after the disease has apparently been cured, in nearly every case a relapse is certain to occur.

A patient should be warned of this liability to relapse, and encouraged to persevere time after time with the same treatment. We very frequently see cases of more or less recent psoriasis, and very seldom cases of the inveterate type, so that it is probable that the tendency to reappearance may die out. One or two cases have certainly justified the recommendation to continue taking arsenic in small doses for a year or more.

Fowler's solution may be given in doses of from 3 to 10 minims thrice daily, beginning with the smaller dose and gradually increasing to the larger. If symptoms of arsenical poisoning come on, the use of the drug must be discontinued for a time.

The Asiatic pills of Hebra are very useful where arsenic has to be taken for a lengthy period. They are prepared by

mixing 66 grains of arsenious acid and 9 drachms of powdered black pepper with gum arabic and water, so as to make 800 pills. Each pill contains about 1-12th of a grain of arsenious acid. In most instances Hebra used to give the three pills once a day, just before dinner; but sometimes, for months at a time, he gave as many as twelve a day. We can most surely do good with arsenic internally, and chrysarobic or pyrogallic acid externally, but must never fail to remind our patients of the almost inevitable occurrence of relapses.

LECTURE VI.

SCABIES.

Chief among the parasitic diseases to which the skin is liable is Scabies, the Itch.

It is dependent upon the presence of the itch insect, the acarus scabiei, and is manifested partly by the effect of the acarus itself on the skin, and partly by the effects of the scratching caused by almost intolerable itching. It is only during the last fifty years that the acarus has been identified and recognized in England as the cause of this disease, though as far back as 1687 Bononio published an accurate but long-forgotten account of the acarus, which, for twenty years before Renucci demonstrated it conclusively to the savants of Paris in 1834, was the cause of keen controversy in that city.

A M. Galès, apothecary to the Hospital St. Louis, was successful in winning a prize offered to the discoverer of the itch mite, and though none of his contemporaries were equally fortunate, it was nearly twenty years before Raspail proved the itch mites of M. Galès to be cheese mites, and his discovery a fraud.

However, it is now an established fact that scabies is due to the presence of the acarus.

The male is very small, and does not burrow under the epidermis; its sole function seems to be to impregnate the female.

The latter dives at an acute angle under the epidermis, into the soft cells of the rete, through which it tunnels a passage, called a cuniculus, and as it travels deposits an egg daily. These burrows average one-fourth of an inch in length, and are indicated by the presence of a vesicle or pustule at the head of a chain of little black dots, placed at regular intervals.

The vesicle is due to the irritation caused by the acarus making its way through the epidermis, and the black dots are the eggs.

When the process of ovulation is complete the acarus hollows out a little chamber beneath the epidermis, in which it dies.

From the ova, if undisturbed, are developed fresh acari, which pass from the skin broken by friction, and keep up on the same person, or develope in others in close contact with the original sufferer, a fresh outbreak of scabies.

To a diagnosis of this disease the discovery of these burrows is an absolute necessity. An expert will be almost sure to find the acarus itself or some of the ova, but, failing this, the presence of even one cuniculus is sufficient.

The most common seat of the cuniculi is the tender skin between the fingers, and over the ulnar prominence at the wrist; but they may be found beneath the mammæ, in the axilla, or on the penis, and in children frequently on the buttocks or between the toes.

It is common to find along with the cuniculi acuminated and more or less isolated vesicles and pustules, with irregular dots or lines in the roofs.

When the nature of this disease has once been suspected, and the burrows sought for, it will rarely be misunderstood, but it is not uncommon to find the victim of scabies treated solely for eczema. Some degree of the latter is almost invariably present, as the itching, especially at night, is intolerable, and the temptation to scratch irresistible. Consequently, we find excoriation, vesicles and pustules and other evidences of an inflamed and irritated skin.

It is possible to mistake scabies for Cheiro-Pompholix (Hutchinson), in which we get vesicles between the fingers, and very distressing itching, but the vesicles soon become blebs, and if the burrows are sought for no mistake ought to be made.

Treatment.—The disease being due to a definite cause will be cured by the removal of the cause, and therefore we have first to get rid of the acari. Sulphur, iodide of potassium, petroleum, balsam of Peru, and other substances will kill the acari, provided they are brought into contact with the drug.

It is advisable to scrub the patient thoroughly well with soap and water in order to break open the burrows, and then to rub freely on the skin the ointment preferred. The patient should then go to bed, clothed in flannel garments, and next morning repeat the bath. A repetition of both inunction and

bath should be made during the next twenty-four hours, and then, beyond the use of a soothing lotion to relieve any accompanying eczema, no treatment should be employed for a day or so, until the result has been watched.

It is important to discriminate between the itching due to the presence of the acarus, and such as may be caused by eczema. The latter will be increased by undue persistence in the treatment by means of parasiticides, while if the itching is due to the acarus it will be cured.

If the burrows are broken up and the ointment well rubbed in, it will rarely be necessary to repeat this method, but occasionally some cases resist the ordinary treatment, and in such a one, after many other doctors as well as myself had failed in giving relief by ordinary means, I was fortunate enough to effect a cure by the use of Naphthol in the following combination:—

℞—Naphthol, 15
Lard, 100
Green soap, 50
Prepared chalk, 10
} M ft. unguentum (Kaposi)

For ordinary cases we rely upon the Unguentum Sulphuris of the British Pharmacopœia, or prescribe one of the following combinations:

℞—Potassii Iodidi ʒ j
Sulphuris ʒ j
M ft. unguentum

℞—Sulphuris sublimati ʒ iij.
Olei cadini
Saponis viridis
Adipis ad ʒ viij
Cretae ʒ ij
(Hebra) M ft. unguentum

A sulphur vapor bath may be used, but is not a pleasant remedy, and if the ointment be well applied, is unnecessary.

The disease is very contagious, being transmitted mainly by contact of warm bodies, and therefore patients should be isolated, while, as a matter of precaution, their clothing should be destroyed or thoroughly disinfected by heat.

LECTURE VII.

ACNE.

No skin disease is more annoying to the patient, or troublesome to the doctor. It is annoying because it occurs commonly at an age when people are peculiarly sensitive to appearance, and always on the face. It is troublesome because it is so very difficult to cure.

There are two common varieties of acne—Acne Simplex and Acne Rosacea. By the first we mean an inflammatory process (generally chronic) of the sebaceous glands, with the formation of nodules and tubercles, in the centre of which is a black comedo. Acne Rosacea is due to dilatation of the deeper plexus of blood vessels of the skin, with or without affection of the sebaceous follicles, and therefore is improperly named acne. It is manifested by erythema of the skin of the nose, cheek, chin, and forehead, and may present visibly dilated blood vessels and evidences of acne simplex, which it resembles in the chronicity of its duration.

Acne Simplex depends upon deficient activity of the sebaceous glands, which produce an imperfect kind of sebum, with a tendency to dryness in the efferent duct. From this results a varying number of black points on the surface of the skin, especially on the nose and forehead. These consist of comedones or plugs of sebum, the end of which get blackened by extraneous dirt. Nearly every one, at some time in his youth, presents evidences of this defective sebum formation, but other conditions are necessary for the development of acne. For this it is necessary that inflammation should be excited in the connective tissue round the follicles and their ducts. If the sebum merely continue to increase in quantity without inflammation, we get little round whitish nodules on the surface of the skin, as well as the black dots, but if inflammation occurs, we get first a reddened condition of the nodules and surrounding skin, and nearly always in some degree the for-

mation of pustules. These suppurate, evacuate their contents, and lead to more or less cicatrisation; but if the follicles alone be inflamed, cicatrisation is avoided. There may be hundreds of these comedones, nodules, and pustules scattered over the surface of the skin, not only of the face but also of the shoulders, which have a peculiar greasy feel.

Digestive disturbances seem occasionally to induce acne, and I have several times found it in young girls who have eaten too much meat and taken too little exercise. Anæmia also seems sometimes to be a predisposing cause, but the advent of puberty in the great majority of cases furnishes the occasion for the outbreak of the disease

What is the exact value of the generative function in the production of acne is doubtful, but the fact of its rare occurrence in eunuchs seems to indicate some connection. The establishment of the menstrual function generally determines its appearance in young girls, for while it is common in males, it occurs with greater frequency in young females, and I have known cases of adult females in whom every menstrual period has coincided with a fresh outbreak.

Certain drugs develope acne, especially tar, chrysarobin, and the salts of iodine and bromine. Tar and chrysarobin exert a local influence, whereas the excretion of the iodine and bromine salts by the sebaceous glands is the cause of their irritant qualities. The iodide eruption coincides with catarrh, and manifests itself commonly about the face; pustulation soon occurs and leaves no scar. Bromide acne occurs usually on hairy parts, especially the scalp, and, as with the iodic form, disappears or increases as the drug is withheld or increased. The treatment of these drug eruptions is therefore obvious; discontinue the drug and the acne will disappear. If, however, as often happens, iodide and bromide of potassium or sodium must be taken, we may minimise their acne-producing effects by the addition to each dose of from three to six minims of liq. arsenicalis.

As acne is chronic in its course, and tends to recur when apparently cured, its treatment resolves itself into two considerations—firstly, how to get rid of the present evil; and secondly, how to prevent relapses. The disease should always be promptly treated, owing to the desirability of preventing the formation of cicatrices. It is therefore important to com-

mence treatment before there is much inflammation. Unfortunately, we are not often consulted before this stage is developed, and we are therefore driven to minimise the evil, where some permanent marking is inevitable. As there is usually an excess of fat on the face, it is advisable to wash with Hebra's spiritus saponis alkalinus, which dries the face. For a mild case in which there are not many pustules or tubercles, I am in the habit of prescribing a sedative lotion to relieve accompanying irritation, and generally use the following lotion:—

℞—Acid boracici, ʒ iij.
Aquam ad., ℥ xij. m. ft. lotio.

Before going to bed the patient is recommended to steam the face over a jug of hot water, and then to rub the skin thoroughly with a hair glove, and lastly to sponge it freely with a lotion containing sulphur, *e. g.*—

℞—Sulphuris præcipitati,
Glycerine, ā ā ʒ vj.
Spir. vini. rectificati, ℥ iv. m. ft. lotio.

The spirit evaporates, and the glycerine causes the powder to adhere to the skin. This remains during the night, and next morning should be washed off with hot water and free sponging with the boracic lotion repeated. Instead of a sulphur lotion, the ung. sulphuris iodidi of the B. P. is sometimes prescribed, but I prefer the lotion; it is easily applied and more cleanly. If tubercles be present, Unna's salicylic or icthyol plaster should be put on each, and kept on as long as possible; if the nodules are not pustular, icthyol gelatine should be melted and painted on in the usual manner. If there be pustules, their contents should be evacuated with a needle. In addition, every black spot should be got rid of by pressing over it a watch-key. A little white plug of sebum will be expressed. This is by the laity commonly thought to be a grub, but microscopical examination proves its real nature. A parasite, the "demodex folliculorum," has occasionally been described, but is rarely to be found in these collections of sebum. Such measures will usually get rid of the disease, but it is, as we have seen, very apt to recur, and it is therefore advisable to recommend our patients to steam their faces, scrub them well

with the hair glove, wash with alkaline soap and water, and above all spend a little time daily in expressing the contents of the blocked follicles.

Failures of health must be attended to, the bowels must be kept regular, and a suitable diet enjoined; but the treatment must be mainly local, and if conscientiously carried out by the patient, will usually prove successful.

LECTURE VIII.

RINGWORM.

I AM sorry that the time at my disposal does not permit me to give an exhaustive description of the varieties of ringworm, so I purpose very briefly to review its treatment, and show how its well-known difficulty depends on the anatomical peculiarities of the disease.

Ringworm is known as Herpes Circinatus or Tinea Circinata if occurring on the surface of the body, as Tinea Tonsurans, or Tinea Tondens if occurring on the scalp, and Tinea Sycosis if attacking the hairy portion of the face. In every case it is due to the presence of the Tricophyton, a vegetable parasite, and is extremely contagious. When it occurs on the body it begins as a small reddish spot, which extends peripherally, and tends to become circular. The advancing edges may be in the form of minute vesicles, or the inflammation of the skin may evidence itself in desquamation.

The patches of course vary in size, sometimes being as large as the palm of the hand, and have a reddish surface covered with thin greyish scales, especially about the advancing edge, while the centre is paler in color and only slightly scaly. This difference between the advancing edge and the portion of skin which is earliest attacked is most marked in the rare cases of so-called Eczema Marginatum, which is in reality due to the presence of the Tricophyton.

The fungus finds its way into the epidermis, and sets up slight inflammation with either the formation of vesicles or of desquamation. If some of the epidermis be scraped off and soaked in liquor potassæ, the fungus will be found to consist of mycelium and spores, the latter, however, being usually very scanty.

The mycelium consists of long, slender, delicate, sharply-contoured pale-greyish ribbon-like formations, or threads, containing here and there spores and granules. It is jointed at

irregular intervals, is remarkable for its length, and usually forms an irregular network. The spores are small round or roundish highly refractive bodies of a greyish color. They are met with singly or in the form of chains, of two, three, or more, and may be isolated or joined to the mycelium.

Upon these microscopic features depends the proof of the disease, though it may generally be easily distinguished by its centrifugal growth, and circular form from the two diseases it is most likely to be confounded with, namely squamous eczema and seborrhœa. This last often takes a circular form on the back and chest, and is associated with some degree of desquamation, but the presence of enlarged sebaceous follicles, and the greasy condition of skin should suggest the correct diagnosis which the absence of the Tricophyton would confirm.

The treatment is simple and easy: wash the part well with soap and water, and then rub on either an ointment of mercury, preferentially the 5% oleate of mercury ointment, or wash freely with a lotion of equal parts of sulphurous acid and glycerine.

Ringworm of the scalp is due to the same parasite as that of the body, but unlike the fungus of Tinea Circinata Corporis, the spores predominate while the mycelium is diminished. It invades the hairs, hair follicles, and epidermis, especially the hairs. The spores are found round the outside of the bulbs and roots, as well as inside the hairs which they completely disintegrate. The hairs become distended with spores, and rupture here and there along the shaft, giving the exterior a rough uneven surface. They become brittle and break, and the free end of the shaft presents a jagged bristly extremity, consisting of broken filaments, between which spores may be found. The epidermis is affected in a lesser degree, and becomes grayish and branny, resembling somewhat eczema squamosum or seborrhœa of the scalp. This latter, however, does not affect the hairs, and should not be mistaken for ringworm.

An error in diagnosis ought not indeed to be possible, for a microscopic examination of the hair must settle the question. In eczema the hairs are not broken or jagged, and do not, as in ringworm, come out easily: and alopecia areata, in which patches of baldness occur, is distinguished by the smooth and shiny surface, while there are never present the broken brush-like hair, which characterise ringworm.

The real difficulty of ringworm is its treatment, and that

because the fungus penetrates so deeply beneath the surface that we cannot reach it, or only more by accident than design.

The disease may last for years, and then seem to get well of its own accord: for this reason there are any number of specifics, the last remedy which happened to be used at the time of recovery winning a reputation only to lose it when tried on a recent case. There ought to be no insurmountable barrier against getting at the fungus, and though in the face of what I have just said, it would be boldness indeed to claim to have discovered a cure, the following method has proved with me more successful than any other. The hair is cut close to the scalp, and then I wash the head well with ether to dissolve the fatty matter of the scalp, which opposes absorption of the drug and its soaking into the hair follicles; and then with a sponge I rub well into the affected part equal parts of ether, glycerine and sulphurous acid. This is done every morning, and every evening a pomade of glycerine of carbolic acid is used for the whole head.

This is the method I employ in cases as they usually present themselves to us, more or less chronic.

If one can get a case in the earliest stage when only the epidermis and perhaps a few hairs are affected, the hairs should be pulled out, and Iodine, which is an excellent parasiticide, painted on the part. Now and then we can by such means prevent the disease extending. It would be impossible to enumerate the varieties of treatment, but I would draw your attention to a method which Dr. Harrison, of Bristol, has found very successful.

Into a solution of half an ounce each of liquor potassæ and spirits of wine, and half a drachm of iodide of potassium, he dips a pledget of lint, which he applies to the scalp for three or four minutes at a time. When this has been done two or three times at intervals of two or three days, he uses a solution of four grains of mercuric chloride in equal parts of spirits of wine and water to make an ounce. This is applied also every other day for a week. He then discontinues all treatment, except inunction with cocoanut oil for a few days, and recommences his former treatment, only using the potassium solution once. He claims for this treatment that it softens the hairs, and permits the formation of biniodide of mercury, where it is most wanted, at the hair bulb itself.

CLINICAL LECTURES

ON

The Varieties and the Treatment

OF

BRONCHITIS.

BY

DR. FERRAND,

Physician to the Laënnec Hospital, etc.

PREFACE

I PROPOSE in these lectures to study the varieties of bronchitis. I will endeavor to present not a deep study of each type of bronchitis, but rather to make a methodical classification of the numerous varieties of the diseases of the bronchi.

The recent discoveries of micro-organisms, while enriching the science of medicine, have not as yet furnished well determined practical applications, and have led to no effective therapeutic indication in this class of diseases.

But here, even as in case of the varieties of phthisis, a rigid scrutiny of different morbid species is fruitful in practical applications, whether it be in the line of diagnosis, or of therapeutic indication appropriate to each species.

My lectures have always been conceived with this end in view, and thus it is that these lectures on bronchitis are the true sequence of those on phthisis. They have been reported by one of my old pupils, to-day our distinguished confrère, Dr. Tisné, and they have been revised by comparison with my notes.

September 27, 1887.

CLINICAL LECTURES ON BRONCHITIS.

LECTURE I.

ANATOMY AND PHYSIOLOGY OF THE TRACHEA AND THE BRONCHI.

Before studying in detail the varieties of bronchitis, it seems essential to recall, briefly, the anatomy and the physiology of the trachea and the bronchi, that is to say, of the tubes through which the air we breathe reaches the lungs.

The continuation of the larynx, the trachea, descends in the anterior portion of the neck and enters the thorax at its superior opening. At about three centimetres from its inception, the trachea bifurcates into a right and a left bronchus, and these extend a trifle obliquely from within without and from above below, the right bronchus being of slightly greater calibre, a little shorter, and lying not quite so obliquely as the left. Each bronchus divides in turn, forming a sort of tree, the branches of which become more and more slender and are scattered throughout the lungs, ending in the pulmonary alveoli.

The shape of the trachea is that of a cylinder with flattened posterior surface, and the larger bronchi gradually lose this flattening until they become perfect cylinders.

The bronchi are in relation with important organs: to the right, the azygos vein; to the left, the point where the aorta crosses the œsophagus; both the bronchi are surrounded by lymphatic vessels and ganglions, and by nerve filaments belonging to the cardio-pulmonary plexus. At the level of the hilus of the lungs the bronchi are in relation with the pulmonary arteries and veins.

We must dwell somewhat on the structure of the bronchi

in order to understand how an irritant may cause the varieties of lesions which are met with. At the outset, we find incomplete cartilaginous rings, the object of which seems to be to hold the bronchi open. In fact these rings become the more incomplete the further the bronchus from the trachea. At first they are like a circle which has lost a part of its circumference, and this loss becomes greater and greater until, when we reach the capillary bronchi, the rings have entirely disappeared. The cartilaginous rings are united together by a fibrous membrane which extends from the larynx. This membrane contains smooth muscular fibres, which are transverse and re-enforce in particular the places where the cartilaginous rings are incomplete. Many of these fibres are inserted at the extremities of the cartilages, forming with them imperfect sphincters, as it were, the relaxation and contraction of which modify the calibre of the bronchi, to the extent of producing a species of peristaltic motion in them.

Inside the bronchi are lined by a mucous membrane which it is important for us to study with care.

The bronchial mucous membrane, like all similar membrane, is finely reticulated, containing within its meshes numerous glands. It is surrounded by elastic fibres, here and there, in quite thick bundles, and it is covered by a layer of epithelium. The cells of this epithelium are cylindrical and ciliated. The physiological action of these ciliæ is most important, seeing that the migration of the products of the bronchial secretion is thus facilitated.

Where two bronchi open into one another, a species of spur is found, which is formed by a projection of the mucous membrane. This spur constitutes an incomplete valve, and it has a tendency to check the passage of the products of secretion.

As we descend from the larger towards the capillary bronchi, the structure alters. The different elements grow less pronounced; the cartilages disappear entirely; the muscular fibres gradually cease to exist; the glands are finally no longer to be found, and the mucous membrane forms simply a thin veil, separating scarcely the aerial channels from the vascular.

The vascular supply of the bronchi differs from that of the lungs. The bronchial arteries are branches of the aorta and of the intercostal artery. These vessels penetrate the muscu-

lar as also the mucous tunic of the bronchi. The veins empty into the pulmonary veins, and here the two vascular systems, pulmonary and peripheral, become one. Finally, numerous lymph vessels follow the bronchi and empty into the ganglions, which are called bronchial because they surround the bronchi.

The bronchial nerves are derived from the anterior and the posterior pulmonary plexuses—that is to say, some are derived from the great sympathetic and others from the pneumo-gastric. These nerves extend both into the muscular and the mucous layers of the bronchi.

Finally, this system of canals has a main function, even as has every living organ; it receives the air from without in order that it may come in contact with the blood. Each of these elements, air and blood, is contained in separate channels; by osmosis the air penetrates the thin walls of the pulmonary alveoli and thus reaches the vascular network of the lungs. The bronchi, therefore, are the carriers of air into the economy—that is to say, they are the scene of hematosis. These physical phenomena, this bringing of inspired air and expelling of expired air, are regulated by a double nervous supply, the one seeming to be the direct cause of the movement, while the other moderates it. Such, indeed, appears to be the *rôle* played by the great sympathetic and the pneumogastric in the mechanism of respiration.

In order to study the varieties of bronchitis, it is necessary to classify them, to unite them into natural groups, even as it was essential when we were considering pulmonary phthisis. This classification can depend on only the three distinct bases on which rests all pathology: the anatomical characteristics, the nosological characteristics, the physiological or pathogenetic characteristics.

An anatomical basis will not suffice, because it is too comprehensive or too elementary for a system like the bronchial. It is too comprehensive, because if we study the effects of irritation on the apparatus in its entirety all grounds for division disappear, and if we endeavor to study it from the standpoint of the anatomical elements which enter into the composition of this apparatus, the multiplicity of these elements would lead to multiplication of varieties of bronchitis, as confusing as it would be artificial.

A nosological basis will not answer here, although it did in case of the forms of pulmonary phthisis. In case of phthisis we are dealing with a definite morbid element, better understood to-day than ever, on which depends every tubercular process. It is in the variety of the causes which lead to this element that we must seek the basis of a classification. In case of bronchitis matters are different. The element is the cause, so to speak, I mean the immediate cause which yesterday was called irritation, and which possibly to-morrow may have the same name. This irritation gives rise to one or another symptom according as it determines in the bronchial apparatus one or another nutritive modification, and according as it ends in altering the vascularization, the secretion, the intimate nutrition, and finally the innervation of the bronchi.

The following, indeed, is the only practical classification of the varieties of bronchitis: Congestive bronchitis; Catarrhal bronchitis; Inflammatory bronchitis; Spasmodic bronchitis.

As for the diathetic variety, we will not neglect it, but I will point out under each variety in what manner it is connected with this or that constitutional disease, and how this or that diathesis is especially prone to be associated with one or another variety of bronchial irritation.

LECTURE II.

CONGESTIVE BRONCHITIS.

Probably the most simple form of irritation of the bronchi is the congestive.

A lesion so elementary as congestion, so variable, so readily confused with other lesions, cannot always be readily separated from these others. Congestion consists in afflux of blood. In the bronchi it is afflux of blood into the mucous membrane, which we have seen is both so thin and so vascular. Such, indeed, is the characteristic of the mucous membrane throughout all the air passages. You doubtless will recall how slender and vascular the pituitary membrane of the nasal fossæ is and how readily it becomes congested.

You will the more readily understand the effects of congestion of the bronchi when, having told you in what it consists, I tell you in what it does not; that is to say, how it is differentiated from both the catarrhal and the inflammatory lesion.

Although we will plainly perceive the truth of the following in the course of our study, we desire to emphasize it now: congestion is sharply differentiated both from catarrh and inflammation. Vascularity plays the only *rôle*, and the afflux of blood is at the basis of it. While catarrh depends in the main on a disturbance in the secretory function and ends in a modification, above all quantitative, of the products of secretion which are constantly on the increase, congestion does not increase secretion, but on the contrary diminishes it, and at times even suppresses it, especially at the outset. While inflammation, by altering the nutrition of the elements involved, infiltrates them with a new exudation and leads to granular and to purulent degeneration, congestion respects these elements, simply irrigating them to excess, and allows them, as soon as the afflux has ceased, to regain in thorough integrity the functions proper to them.

The difficulty met with post-mortem in delimiting these

various morbid processes, even by the aid of the microscope, has resulted in their being deemed nearly similar even if they have not been deemed one and the same. I hope to prove to you that clinically they ought and can be differentiated, and that such a differentiation is of the greatest possible importance both from the standpoint of prognosis and of therapeusis, that is to say, from the standpoint of what constitutes the chief difficulty and merit of a sound diagnosis.

A further distinction, deemed of too little note to-day and yet most essential clinically, is the differentiation of active from passive congestion. Under the plea that these two forms of congestion are often so intimately associated as to be practically inseparable, the tendency is to no longer differentiate them, a tendency which for more than one reason is to be regretted. A common factor in both of these processes is exaggerated afflux of blood; but in case of active congestion the afflux is the result of the passage of an excessive quantity of blood in a given time through the vascular system which is the seat of congestion; and in passive congestion there is accumulation and stasis of a greater quantity of blood in this system. In a word, active congestion consists in a hyperemia through excessive activity of the circulation, and passive congestion is hyperemia with stasis. The latter is above all the result of mechanical obstacles to the circulation; the immediate cause often lies beyond the locality where it is produced, in the heart for instance; the former is usually connected with some form of irritation acting on the organ itself; it appears to result from an appeal for blood from the irritated organ itself, as it were. In reality it follows on a localized vaso-motor dilatation of the vascular system of the organ.

Do not wonder that I dwell on these distinctions, which are far too frequently misinterpreted or not recognized. You will shortly better understand how important it is to recall these facts to you.

We will in particular speak of active congestion, in the first place because less is known about it, and secondly because it is important to the physician under the two forms, acute or chronic, under which it is manifested. Finally, bronchial congestion must be subdivided according as its seat is in the larger or the smaller tubes. In the first case, the affection is ordinarily not serious, although not always mild in its

course; in the second, when intense and persistent, especially when general throughout all the bronchial ramifications, the entrance of air into the capillary bronchi may be entirely prevented, the respiratory field in proportion diminished, and the patient be subjected shortly to the risk of true asphyxia.

Symptoms.—The symptoms suggestive of congestive bronchitis consist in subjective and in functional troubles.

The first sign is a peculiar sensation of fullness accompanied by heat and even burning in the chest. These sensations are at times limited to the retro-sternal region, and often this same region is the seat of true pain, permanent, a pain which is awakened in particular by forced inspiratory movements, efforts at cough or at sneezing. This pain may extend to the base of the thorax, near the false ribs and around the waist.

These sensations are accompanied by functional disturbances, and, at the outset, by more or less aggravated dyspnea. The reason for this dyspnea is apparent. The thorax is a cavity the capacity of which varies with each respiratory cycle; when it dilates, the air and the blood tend to rush in in order to fill the virtual vacuum which follows on the enlargement of the cavity; the entire intra-thoracic space which is set free must be filled either by air or by blood. Now when the blood flows into or remains in this apparatus, it occupies a portion of the space to which the air has a right. Thus it is that congestion diminishes the quantity of inspired air, curtails the field of hematosis and causes dyspnea.

This dyspnea is accompanied by cough, the characteristic of which is unique enough to deserve special mention. The cough is dry, repeated in series, painful, tiring, increasing the engorgement of the thorax instead of relieving it. It causes no expectoration or else results in the expulsion of a slight amount of glutinous mucus, occasionally a trifle discolored by blood. At times, a spasmodic element being superadded to the congestion, the cough becomes more distressing, even to the extent of producing vomiting, which is, of course, reflex in nature. This occurrence, however, is rare and is not met with in simple bronchitis.

On auscultating the thorax, the respiratory murmur is rough and dry all over; there are few râles or only a few sonorous, varying in tone according to the depth of the congestion, loud in the large bronchi and sibilant in the small. In

case the congestion is intense, the respiration ceases to be roughened, but becomes obscure and the murmur may even disappear entirely; it is then that the swollen bronchi diminish in calibre, so much even as to prevent the ingress of the column of air.

Aside from the signs yielded by the bronchial apparatus, properly speaking, there are others from the side of the neighboring organs. The mucous membrane of the upper respiratory tract, which is in such intimate functional relationship with that of the bronchi, sympathizes always with affections of the latter. This is the reason why in case of congestive bronchitis we observe congestion of the pharynx as also of the larynx. Therefore the presence of a certain degree of erythematous angina, readily discernible, and of congestive laryngitis which is marked by simple bronchitis and by change in the voice.

As for the lungs the same negative signs are present; there is neither murmur nor dullness, that is to say, but a simple diffuse roughening of the respiratory murmur; at times the respiration is choked when the congestion is intense. When râles are present, they consist in short whistlings produced in the bronchi of mean or of fine calibre.

The general signs of congestive bronchitis, finally, are very variable, and seem to depend, at the outset, without doubt, on the extent and on the acuteness of the congestion; but also, and especially, on the surroundings amid which it developes, and, further still, on the general health of the patient. This is why usually pure bronchial congestion is almost entirely afebrile, while the form which accompanies colic is febrile of high enough degree, and while, further, the form which accompanies emphysema in certain patients, or that which occurs in children, is often attended by great elevation of temperature.

LECTURE III.

VARIETIES OF CONGESTIVE BRONCHITIS.

This lecture is the most important of all in our study of the varieties of bronchitis, and from it will result indications of the most practical nature.

Simple Congestive Bronchitis.—The most simple form of the affection is that which we witness so often, so frequently, indeed, that it scarcely arrests our attention. The fact is that its mild course and its frequency will account for the manner after which it is neglected.

In determining the most efficient cause we must consider two elements: the one due to atmospheric changes, to variations in temperature, natural or artificial, in a word, to all causes which lead to chill; the other depending on a peculiar impressionability of the integument, which is further often in accord with a constitutional predisposition of the patients.

This manner of action is explained by the direct and topical irritation of the cold air on the mucous membrane of the bronchi, and also by the intimate physiological relations which exist between the skin and the bronchial mucous membrane. These two respiratory surfaces are both directly subject to atmospheric contact, and send the one to the other the impression which they receive, and what is more astonishing still, is the fact that the impressions on the skin may react on the bronchial mucous membrane, whatever the part of the integument which has been exposed to the external influence.

This congestive bronchitis is ordinarily a simple cold, which the physician should recognize as being the first type of a pathological series, but which rarely requires his interference, and disappears in a few days, often in a few hours. When matters happen differently then it is because a foreign element has become superadded, and then we have to deal with one of the varieties which I am going to describe.

Congestive Bronchitis by extension from the mucous membrane of the upper air passages.—We have here to deal with the whole category of the congestive irritations of the naso-pharyngo-laryngeal mucous membrane, which may by extension complicate congestive bronchitis. The physiological relation which subsists between all these mucous surfaces explains sufficiently the method of extension, and how coryza, pharyngitis, and congestive laryngitis may easily become a bronchitis of the same morbid nature. But this form need not further claim our attention any more than the preceding. The reverse holds true for the following form.

Congestive Bronchitis of pulmonary origin.—Owing to the continuity of surface existing between the ultimate ramifications of the bronchi and the pulmonary alveoli, it is apparent how irritative affections of the lungs are accompanied by a certain degree of irritation of the bronchial mucous membrane; there are certain varieties, however, which are specially prone to this complication. These we proceed to study.

A. At the outset, *whooping cough* and *asthma.*

In case of whooping cough congestion accompanies the first stage of the affection; it leads to the dry cough, not specially characteristic; there are no râles to be heard, but only roughening of the respiratory murmur.

It is established that the general depression which exists during whooping cough, and in case of confirmed asthmatics, exposes them especially to morbid affections, and in particular is the integrity of the respiratory apparatus and of the bronchial mucous membrane at stake. Each asthmatic crisis as well as that of whooping cough causes sharp oscillations in the tension of the bronchi, which necessarily react on the circulation of these tubes. Congestion thus accompanies the crisis, and it tends to persist in the capillary system of the pulmonary vessels, worn out, if not paralyzed by the repeated or sustained tension to which they have been subjected. Thus it is that often the bronchial congestion, at the outset transitory and following only on the spasmodic attacks, becomes more persistent and eventually permanent.

We must not, however, forget that the congestion of the bronchi, here secondary, may play the *rôle* of a provoker of the asthmatic attack when it occurs accidentally, as it were, or independently of the actual course of the affection. When-

ever secondary, however, and this is most frequently the case; it is passive in a certain sense, although it is dependent on a state of excessive excitability of the pulmonary innervation. I will return further on to this point.

The effect of irritant causes, too dry or too cold an atmosphere, dust of various kinds, etc., are without question frequent sources of bronchial congestion; but the variety of greatest interest is that which follows upon the crisis. The difficulty with which the air is renewed in the chest during the crisis results in an afflux and a stasis of blood. It is this afflux of blood to the mucous membrane which, after having played a part in the dyspnea, starts the catarrhal period by apportioning to the glandular and epithelial elements the materials indispensable to the secretion which is going to exist after the access and give the patient rest.

B. In *pulmonary emphysema* there exists no tendency to congestion of the parenchyma of the lung. Indeed the emphysematous lung becomes slowly changed, so that the separate alveoli are transformed into simple cavities, of greater or less size, in which the radicles of the pulmonary vessels lose in great part their expansile surface. But, if the vesicular element is atrophied, and with it the pulmonary circulatory system, the same does not hold true of the bronchial element; the bronchi dilate, and their vessels, in accord with this same hypertrophic movement, develope to excess. This is the reason why emphysematous patients are so often exposed to bronchial congestion.

We have over and again pointed out to you in the wards emphysematous individuals in whom, under the influence of some cause, but slightly irritant, the bronchi become engorged, so that the dyspnea is ardent and the cough short and choked, frequent and without much expectoration, perhaps a little stringy mucus more or less mucilaginous.

At the same time, scattered over the chest, sibilant râles are heard, short in duration and occurring only at the end of inspiration, and a few sonorous râles accompanying expiration; while coincidently with these râles, and particularly at the apices, the vesicular murmur is heard with the moist ring which is proper to emphysema. These phenomena are not only associated with dyspnea, at times excessive and even reaching orthopnea, but the respiratory anguish is often in-

creased by the pains which the patient has in the thoracic walls, notably around the waist and at the level of the attachments of the diaphragm.

The mucous membrane of the upper respiratory tract takes part in these disturbances; a pharyngitis results which is marked by gurgling and by general redness of the mucous membrane and of its papillæ, and later by permanent granulations. Change in the voice is a sign that the larynx is in turn affected.

This pathological scene may be played without the occurrence of much fever. Often, however, the temperature rises, the appearance is congested, the perspiration abundant, the pulse strong and frequent.

At other times, to these phenomena of fever with congestion, are superadded those of asphyxia, cyanosis, lividity.

The phenomena do not often attain such intensity; they often decrease in degree and then return with ease. Sooner or later their repetition leads to permanency, and the paroxysms are no longer characterized by an acute congestive crisis, but there exists a stasis which is intensified by the progressive dilatation of the heart, which promotes the asphyctic phenomena to which I have referred.

Finally, there is a certain type of congestive bronchitis on which I cannot insist too strongly, because it is generally not detected, oftener confounded with emphysema, or with pulmonary congestion, and because further it constitutes a morbid entity as painful as it is refractory to therapeusis. (*Vide* the thesis of my pupil Dr. Chuquet.)

I cannot better describe this type than by relating the pathological history of the late janitor of this school; he was a robust man, about thirty five to forty years of age, of great breadth of chest, high color and very muscular. He had suffered from certain vague manifestations of rheumatism, with the nature of which I am not familiar any more than I can tell you in what degree alcoholism played a *rôle* in his case: sufficient the statement that one or the other of these conditions is generally of much account in the etiology of the phenomena which are claiming our attention.

This man, whose occupation did not expose him to changes in temperature, was nevertheless almost always with a cold, and was markedly emphysematous. But this would not have

troubled him particularly if he had not been seized every now and then by attacks similar to those of which we are treating. Three to four times each year, and the attacks became more and more frequent, he was subject to a violent spasmodic cough accompanied by a species of suffocation, intense congestion of the face, exorbitism and lachrymation—in a word, all the phenomena of an attack of spasmodic cough and anguish the most unendurable. These attacks were associated with only slight expectoration, a little stringy aerated mucus, at times striated with blood or even with pure or dissolved blood in greater or less amount.

On examination, the pharynx was intensely congested and studded with the remnants of old granulations of the mucous membrane. The nasal passages were dilated and the voice deeply altered. The respiratory murmur was veiled by numerous sonorous, vibrating râles varying in quality; at the base of the lungs a few sparse mucous râles could be heard. The patient had sufficient fever to oblige him to keep his bed, aside from the fact that the dyspnea and difficulty in breathing which marked the attacks practically incapacitated him. Concomitantly all alimentation was suspended.

After having tested in vain the routine therapeutic measures, blisters, etc., I concluded to test emetics. Owing to the decongestinating action of ipecac, I ordered it, but without much effect. Convinced, however, that such was the indicated therapeusis, I resorted to a more powerful drug, and ordered tartar emetic. The first day the patient took .05 grammes, the second day the same dose, and from the third day on .10 grammes. The nauseated condition into which the patient was thus thrown was so distressing that I did not continue it more than a few days. The patient was so much relieved that he took the drug for about a week, at the end of which time the attacks had ceased.

We might think that the attacks would in this time have ceased of themselves, although the drug may have hastened matters somewhat. My answer is that ordinarily the attacks when left to themselves lasted from six to eight or more weeks. Finally, and this is curious and important, the patient, the attack once at an end, breathed more freely than it had been possible for a long time, being able to walk and to work with far greater ease. Let me add that the recurrences became

less frequent when the man obtained a better position and then he passed from under my observation.

To cite another case:—a grocer, after repeated attacks of bronchitis, ended by having the same pharyngo-laryngitis, losing his voice almost entirely and suffering from spasmodic attacks like those just described. The man was strongly built, rather stout, and yet was at times confined to his room for weeks, during which he was subject to very severe paroxysms, accompanied by phenomena of suffocation and of asphyxia.

The same treatment was prescribed by my advice by his family physician, and to-day the man is well.

Still another instance is that of a civil engineer, who, by his occupation, is subject to great changes of temperature, often travelling at night, and is considered as having a serious affection of the lungs. When I saw him he presented the same symptomatic look: granular, congestive pharyngitis, chronic laryngitis, frequent attacks of congestive bronchitis, and the patient actually thought of renouncing his occupation. After the treatment I have outlined, the attacks disappeared, and this man pursues his profession in a state of sufficient health.

I might further refer to a missionary, arthritic and very fat, in whom fatigue and defective hygiene have resulted in fibrous rheumatism, emphysema, cardiac dilatation to a certain extent, and attacks of congestive bronchitis with the attendant phenomena. The same treatment resulted favorably, although the condition of the heart did not allow as complete a cure as in the previous cases.

I have deemed it essential to insist on these points because we are speaking of a pathological variety not referred to in your books, and yet which you will meet with in your professional career, and also because the cure is difficult and the only efficient therapeusis which I have found is that of which I have spoken.

C. Pneumonia.—There is always present in the neighborhood of a pneumonic centre a zone of pulmonary congestion around which the bronchial mucous membrane is itself more or less profoundly affected. Now this bronchial congestion is veiled by the pneumonia and plays a secondary *rôle*. But before the pneumonia is pronounced it is not rare to find re-

peated bronchial irritation for a number of days. Still more frequently do we note the tenacity, sometimes extreme, of the bronchial irritation which at times persists after convalescence. This irritation, it must be noted, depends rather on a diathesic condition than on the effect of the bronchial congestion itself.

Finally, it may happen during the course of a frank pneumonia, that the patient is seized by extreme dyspnea, without any increase in the inflammatory area, a dyspnea which is then the result of a bronchial congestion quite intense, and generalized enough to compromise life. We are dealing with a condition independent of the pneumonia, with a newly superadded agent, which calls for special treatment; in these cases venesection triumphs over the asphyxia by decongestioning the bronchial mucous membrane. This fact is well proved by a case that I noted in the *Bulletin de Thérapeutique.*

D. Tuberculosis.—You are aware that pulmonary congestion is a frequent accompaniment of tuberculosis, that it often precedes it, that it always accompanies it to a greater or less degree, and that it increases at the periods of change of the tubercle, when it degenerates, for instance.

Congestive bronchitis is possibly less frequently met with, but this variety is often found in the tubercular. It is often the premonitory sign of an imminent or beginning tuberculosis. It is it which causes in many young people that distressing, tiresome, even painful, dry cough, without expectoration, which should always direct the attention of the physician both to the existence of congestion, and to the cause at the bottom of it. This cough and the congestion at the base of it are intensified, besides, at each addition to the tubercular process, and are accompanied by more rapid respiration or even by true dyspnea.

When the tubercular foci break down, congestion is again an accompaniment, but it extends less to the surface of the bronchi. The focus which softens, even as the exudation which suppurates, provokes less irritation in its neighborhood than it does during the formation stage. The bronchitis then tends to pass from the congestive variety to the catarrhal.

Finally, the bronchial congestion remains permanent around the tubercular foci, becoming confounded with the pulmonary congestion, and the two processes together are

responsible for the various abnormal sounds which may be heard in the neighborhood. But, even as happens in case of pulmonary congestion, there is formed a peri-tubercular zone in which are multiplied the elements capable of contributing to the propagation of the lesion.

Enough has been said to prove how essential it is to fight this process, which constitutes of itself a new source of suffering, and which assists so powerfully in the genesis and in the extension of the disease.

I was recently able to show you two patients presenting these symptoms, and in whom you had an opportunity to witness the amelioration under the influence of a medication emollient and derivative. I might tell you, in addition of a woman, the inmate of a religious community, who recently came to Paris. She has been called tubercular and so treated, having been ailing for two months, by every routine means which suggest themselves. This patient was subject to frequent and to irregular febrile attacks, coughed for hours, the cough being of the dry, irritant nature, of which I have just spoken, suffered from insomnia and almost total loss of appetite. At one of the apices there were marked râles, and in the rest of the lung a few vibrating râles unequally disseminated in the bronchi, and grouped especially near the apex. Directing my treatment towards the bronchial congestion which I recognized, I stopped all balsamic or exciting medication; I ordered a little antipyrin, emollient fumigations, poultices over the thorax, a little opium, and in two days all the symptoms had disappeared (except, of course, the râles at the apex); the patient was able to resume her journey, scarcely believing that she was not cured, but in reality only relieved of an accidental complication. True enough this complication was a serious matter in itself, and might speedily render fatal a disease which, thus ameliorated, may remain quiescent for an indefinite time.

E. Other Organic Affections.—Around tumors which may develope in the lungs, bronchial congestion often occurs connected with the growth of these tumors, softening of cancer or of gummata, rupture of cysts, etc.; or rather, these foreign bodies act as a predisposing cause in virtue of which the most simple occurrences become causes of bronchial and of pulmonary irritation.

F. Pleurisy.—Pleurisy constitutes a better determined cause and a more interesting one of congestive bronchitis. This affection ordinarily is preceded by a dry, distressing cough, analogous to that of congestive bronchitis, being accompanied by a sensation of oppression in the chest, especially retro-sternal, which we are justified in considering due to an active congestion of the bronchial mucous membrane.

Later, when the exudation has become absorbed and has been replaced by a more or less solid layer of false membrane, the same cough may occur and is due to the congestive irritation of the bronchi. But then the congestion is apparently associated with a peculiar blood stasis, the fibrous shell which surrounds the lobes corresponding to the lungs, opposing the free entrance of air as well as the elastic play of the lung itself.

Congestive Bronchitis of Indirect Origin.—Under this heading we will make the following subdivisions:

1. *Affections of the Heart.*—Aside from affections of the pulmonary system, diseases of the heart lead most frequently to bronchial congestion. These patients may suffer from active congestion of the mucous membrane. Furthermore, the obstacles in the way of the circulation through the vascular system of the bronchi cause, at least in the beginning, an excitability of the mucous membrane which easily results in colds and in bronchial irritation. This is the reason why such patients derive much benefit by a sojourn during the bad months in a southern clime, amid equable temperature.

2. *Affections of the Stomach.*—In many neuroses of the stomach and even in the beginning of a number of organic affections of this viscus, the patients complain of a dry and distressing cough accompanied by a sensation of retro-sternal pressure. It is evident that, especially at the outset, this cough is usually nervous, but not infrequently it becomes congestive. Besides, were it not such at the beginning, it would soon become so through the irritation which constant repetition causes.

3. Affections of the *liver* and even those of the *kidney*, may play a similar *rôle*. For the latter organ in particular, bronchial irritation may not only be sympathetic or reflex, but it may also follow on the congestion due to the elimination by the bronchi of a certain proportion of the ammoniacal ex-

cretions which the kidneys do not dispose of, or insufficiently so in case of inflammatory affections of the organs.

4. *Acute diseases of the skin* are often complicated by congestive bronchitis. Erysipelas, for instance, may lead to this complication. It is more common, however, in most of the eruptive fevers. Among them, measles is most likely to provoke bronchitis; but this is more frequently catarrhal than a congestive bronchitis. Often, true enough, the latter becomes the former.

5. In case of *typhoid fever* there is generally at the beginning a certain degree of irritative and congestive bronchitis.

6. *Menstrual disturbances, puberty, pregnancy,* and the *menopause* are often accompanied by bronchitis. Whether the congestion be supplementary or complementary, the mechanism is readily understood, and I will not dwell upon it. It is only later on that the congestions arise which are the result of the difficulty with which the blood circulates, or to morbid changes in the blood.

Congestive Bronchitis due to the Elimination of Medicinal Agents.—An interesting form of irritative congestion of the bronchial mucous membrane is that which is due to the elimination of certain medicinal substances, and this explains the calmative action of such agents as the balsams, sulphur, creasote. These agents, introduced into the blood by absorption from the intestinal canal, come with the blood into contact with the bronchial mucous membrane, and are thence eliminated by means of a species of transudation, leaving behind a greater or less irritation. This irritation of the respiratory mucous membrane is seen very frequently after the ingestion of the iodide of potass, and, better still, after various balsams. The knowledge of this fact should warn us against the premature use of these agents in case of broncho-pulmonary congestion. Indeed, except in the torpid forms where the favorable effect is due to the excitation of the mucous membrane, their administration often results in a marked aggravation of the irritability of the mucous membrane.

Diathetic Congestive Bronchitis.—Rheumatic and gouty patients, more so than others, may present the common variety of bronchial congestion, but there occurs in them a special variety, interesting on account of its localization. It occupies the borders of the lungs, in particular the region above the

sternum, and is accompanied by fine and sharp râles; this *marginal bronchitis* is only a localization of the congestions to which these patients are so prone.

A more interesting variety still is the dry bronchitis of the gouty. It exists aside from the attacks, the cough being dry and sonorous, without secretion, and being spasmodic. This irritation, awakened by cold and by dry heat, is very painful, and it ends often enough in catarrhal bronchitis.

Further causes of congestive bronchitis are age, the torpid variety being found most frequently in the old, while in the child the affection is more acute, and tends to merge rapidly into broncho-pneumonia. In children, also, dentition is one of the most frequent causes of congestive bronchitis.

In a word, any morbid element exposes the subject to congestive manifestations, and therefore to congestive bronchitis. After the analysis we have made, it is impossible without repetition to insist on further causes.

LECTURE IV.

CONGESTIVE BRONCHITIS—PROGRESS AND DIAGNOSIS.

Congestive bronchitis in its simple form is nothing more than what is ordinarily called a cold. It may last for days or for many weeks. The general febrile phenomena are often marked at the beginning, and again slight and transient, not sufficient to cause the patient to stop work, ending soon with or without perspiration.

Ordinarily the congestive variety is somewhat modified, and the affection is altered into a more or less abundant secretion, into a catarrhal expectoration, which, as I have stated, sometimes follows on the disappearance of the general symptoms, and is always accompanied by a feeling of deep relief.

Congestive bronchitis often affects the *intermittent* variety, possibly because of the changes in the general, and in particular, in the pulmonary circulation. Thus certain patients feel better towards night, and others become notably worse—a change for the worse which not only concerns the local symptoms, but also the general, such as the elevation of temperature, the pulse rate, etc.

At times the type is *intermittent*, the local and general symptoms recurring at a certain hour. This holds more especially for malarial regions, and during certain epidemics of congestive or catarrhal bronchitis.

Finally, I must refer to the recurrent attacks of congestive bronchitis so frequent in infants and in the old, and in every individual at times of special predisposition, such as the menstrual periods, pregnancy, the puerperal state, or in those the subject of heart disease or emphysema.

Such foremost is the congestive bronchitis on which I have laid special stress, as occurring particularly in emphysematous rheumatics. I then noted how this variety of bronchitis was paroxysmal during the attacks, and recurrent on the slightest provocation.

A grave variety, frequently conjoined with the preceding, is *suffocative* congestive bronchitis, rarely met with in the adult, but often in the infant and the old. This form is almost always consecutive to an organic cardiac, pulmonary, or renal affection. I have seen it occur during the course of scarlet fever and of measles.

In case of measles it is rarely suffocative of a sudden, and occurs usually by propagation of the congestion from the larger to the smaller bronchi. In case of scarlatina it may declare itself more abruptly.

I recall the case of a little boy suffering from an ill-developed scarlet fever. Instead of convalescing normally, he remained in a precarious state, although without special symptom, so much so that a pædiatricist, whom I called in consultation, gave a relatively good prognosis. Two days thereafter a congestive suffocative bronchitis declared itself, from which the patient died in a few hours. I should add that there existed only an insignificant quantity of albumin in the urine.

The urgency of the symptoms may awaken the belief that we are in the presence of an attack of asthma or of a suffocative catarrh. But the sibilant râles and the absence of expectoration proves that the congestion of the mucous membrane is intense enough to render it turgid to the extent of almost obliterating the lumen of the bronchial tubes, and of preventing the access of air into the lungs. Whence follows a suspension of hematosis, and a condition of asphyxia which may prove fatal.

Congestive bronchitis does not always occur under an acute form. We have seen that while certain varieties of the affection are very transitory, others are very prone to recurrence, and in consequence of repetition the affection tends to assume a chronic type.

Especially in connection with the diatheses does bronchitis assume the latter type; witness the occurrence in rheumatic and in gouty individuals. Dry bronchitis, marginal bronchitis, recurrent bronchitis—such are the varieties most frequently met with in these individuals, and the marginal form usually becomes chronic, particularly in the rheumatic. In the gouty we most frequently find dry bronchitis, and this is rarely chronic in type; at least, when congestive bronchitis

becomes chronic in the gouty it is usually the result of repeated, successive, prolonged acute attacks.

Finally, whether the individual be rheumatic or gouty, it is in connection with these affections that we find the variety of recurrent congestive bronchitis, to which I will return in particular under the head of treatment.

In case of scrofula, bronchitis is certainly not an uncommon accompaniment; but it is not the congestive type which it ordinarily affects; we will see the truth of this when we speak of catarrhal bronchitis. Still, exceptionally, in the scrofulous we meet with congestive bronchitis as the result of some accidental cause such as is likely in any event to give rise to it.

Diagnosis.—Congestive bronchitis is characterized, we have said, by: 1. A subjective sensation of retro-sternal pressure. 2. An objective dyspnea out of proportion to the physical signs of the affection. 3. The absence of abnormal sounds, which are usually replaced by a roughening of the respiration, or purely, even in the aggravated forms, by whistlings, and even by absence of murmur, or other sign indicating a modification in density of the pulmonary parenchyma.

It is above all important to differentiate carefully congestive bronchitis from catarrhal bronchitis. If you recall the difference we have stated between congestion and catarrh, it is an easy matter to understand the signs by which these two forms of bronchitis differ.

Catarrhal bronchitis is accompanied by a sensation of retro-sternal difficulty much less accentuated, often none at all or insignificant, by less dyspnea, dependent, however, on the greater or less extent and depth of the lesion. Finally, and above all, the secretion is more or less abundant, and consequently there are present mucous râles of varying calibre and an abundant fluid expectoration; while congestive bronchitis produces only an insignificant mucous secretion and an expectoration, slight or viscous. The diagnosis cannot, hence, be difficult, except in the instances where the two processes, catarrhal and congestive, are combined or follow rapidly the one on the other.

Inflammatory bronchitis must also be differentiated from the purely congestive variety. The inflammatory form is accompanied by a more intense febrile movement, more abrupt and more continuous. As for the physical signs, the abnor-

mal noises, the sibilant and sonorous râles, some mingled with moist râles, are met with in the inflammatory form in quick succession, while they are much more rare in the congestive variety. Finally, the expectoration is always profuse enough at the outset; true enough, it is sparse and mucous, and this approaches the congestive type, but it shortly becomes abundant and muco-purulent, a characteristic of the inflammatory variety of bronchitis.

The fact is that the ordinary rule is for bronchitis to be often congestive before becoming purely inflammatory; this is the reason why generally bronchial congestion is considered the first stage of the inflammatory, and therefore as not deserving special description. I hope that after what I have said you will avoid this unfortunate error and will recognize and treat bronchial congestion as a separate entity.

As for spasmodic bronchitis and the true neuroses, they are differentiated from bronchial congestion by the absence of fever, by the progress of the affection—that is to say, by the intermittency of the attacks and the greater or less regularity of the recurrences, and by the abruptness with which they often begin and end.

It is apparent that here as well congestion often complicates the spasm, and that it is present, as we will see, often as effect if not as cause.

In order to weigh the delicate points in the diagnosis it is essential to consider the general state of the patient; fever is absent in the true and habitual neuroses, at least thoughout the greater part of their evolution. The abnormal sounds, so variable in case of the neurotic attacks, are present persistently in the congestive attacks; and when the signs of these two factors coincide it is because the factors themselves co-exist, and this is not infrequently the case.

From a diagnostic standpoint, no less important a question as regards therapeusis is the determination of the cause, more or less direct, of the congestive bronchitis. It is unnecessary for me to repeat what I have said already in regard to the causes and the varieties of this affection. I only desire to resume the problem by stating the points which are furnished by the extent of the congestion, by its seat, by its evolution.

When congestive bronchitis is of much extent, we ought

at once to think of a general cause. Generalization of the affection allows us ordinarily to eliminate tubercular bronchitis, which affects the apices and cardiac bronchitis which involves the bases. True enough congestive bronchitis may become generalized even as may the morbid product with which it is associated, and, in case of cardiac disease an active and general congestive bronchitis may occur. But it is true also that such instances are exceptions to the rule.

The seat of the bronchial congestion is also of significance. I have mentioned the marginal form met with in rheumatics, which is accompanied by fine, bursting râles, and which is found along the interlobar fissures, in the axilla, above the diaphragm, in particular in the emphysematous.

I need not dwell again on the significance of apex bronchitis.

The progress of the bronchial signs is also of great importance. Bronchitis beginning at the base, and in which the râles as they become more abundant replace the roughening of the vesicular murmur, is a hypostatic form, which may be due to an obstacle in the circulation (oftenest cardiac disease) or to alteration of the blood (typhoid, nephritis, etc.).

In conclusion, the study of the extent, seat and progress of the disease, suffices to establish, with the diagnosis, a strong presumption in regard to the causal factor of the congestion; this presumption becomes a certainty when it is confirmed by other practical considerations drawn from the patient.

LECTURE V.

CONGESTIVE BRONCHITIS—TREATMENT.

The treatment of congestive bronchitis depends, as does all therapeusis, on a triple indication—that is to say, on the seat, the form and the cause of the affection. In other words the indications are anatomical, physiological and nosological.

The anatomical indication consists here in bringing to bear topical medication directly on the irritated surfaces and on those which are in near contiguity, or else indirectly on the parts which are physiologically or sympathetically in common relation.

An emollient indication is the first which suggests itself among those which are applicable to the affection, since we are dealing with irritant congestive disease.

To fulfill this emollient indication, the first thing to do is to remove all sources of fresh irritation. It is hence essential that the bronchial mucous membrane should be excited as little as possible; and since we cannot remove it from contact with the air, this air must be in composition, in warmth, in purity, in moisture above all, as little irritating as possible. Equability in the composition of the air plays an important part, and so long as the composition does not change, the irritation the mucous membrane is subjected to is slight. It is evident, therefore, how important it is, in even the less serious forms of congestive bronchitis, to keep the patients at home, to cause them to avoid change in temperature as well as impure inhalation, even though the air be only slightly charged with dust.

Not only must direct irritant agents be kept at a distance, but also (and this is very important, for it is a rule often neglected) the indirect irritants—that is to say, all agents that act by elimination. To explain the matter, you know that many hygienic or medicinal agents, once in the economy, are eliminated by the mucous membrane of the bronchi. In pass-

ing through this membrane they exert a modification in nutrition which usually is followed by irritation. Such, for instance, are many gases, carbonic acid in particular, also sulphohydric acid. In addition we must mention the balsams, sulphur, creasote and all its compounds. None of these agents can be tolerated when the indication is for emollient medication. Still they may prove of value when, the stage of active congestion having passed, there remains only a chronic and passive congestion to combat. At the outset these agents increase the ill, and even aggravate it.

Even in case of diathesic patients, when the bronchitis is coincident with constitutional influence, there exists almost always an occasional cause which at least determines the localization of the irritation on the bronchial mucous membrane, and this cause it is above all essential to remove.

An emollient medication is the most likely to fulfill this indication. Soothing drinks, mucilaginous soups, hot or lukewarm, act on the neighboring mucous membrane; further still, their introduction into the blood facilitates glandular secretion, as well on the skin as on the mucous membrane, and in consequence tends to provoke the catarrhal flux which we have seen modifies so favorably congestive inflammation of the mucous membrane and determines its resolution. Fumigations, which are practised with mild aromatics, are more direct agents than the drinks, and constitute one of the most rational of the topical treatments, and are most effectively useful. The moist, warm vapors from the fumigations act as a soothing bath on the mucous membrane, and favor the separation of the altered mucous membrane, and of the slight viscous secretion which has formed on its surface.

The cutaneous surface of the thorax may also to advantage be used for the application of emollient agents. Thus you have seen me apply with great success large poultices of linseed meal on the chests of patients subject to the irritant cough and the retro-sternal pressure of congestive bronchitis. Large plasters applied over the chest or the back have a similar influence, and the same holds true of collodion. Inunctions of fatty or oily substances fulfill a similar indication, and may be most useful.

All these agents, of which the poultice is the type, act by retaining within the tissues the humidity which, normally, is

constantly evaporated from the skin, and also by maintaining on the surface a species of local bath; perhaps also by increasing the conductivity of the superficial tissues. These applications favor the emission of heat, and this frees the tissues from the excess of heat which is altering or rendering them more vulnerable. Whatever the case, whether the action is chemical and there is diminution of oxidation of the tissues, or whether there is a sympathetic modification between the two surfaces, skin and mucous membrane, it is certain that the above agents facilitate the secretion of the bronchi and decongestionate them.

Revulsive medication must often assist the preceding. It is practised on the skin, preferably that of the thorax, and particularly over the surfaces which correspond with the affected bronchi. We know that the anterior and superior regions of the chest are those where the cutaneous sensibility is perhaps most developed, and, in any event, it is the most apt to awaken the reflexes of the respiratory centres, those in a word which, in asphyxia, maintain the longest the power of provoking reflexively the respiratory movements.

This therapeutic method is peculiarly applicable to the cases where deep congestion does not yield or does not seem to intend to yield to emollients. The agents at our disposal are: tincture of iodine, mustard plasters, frictions and by ammoniacal liniments, camphor, alcohol, spirits of turpentine; finally the blister, which is rarely indicated on account of its limited action. If necessary the punctate cautery may be used, but its value is exceptional.

Intestinal revulsives are less frequently utilized in these forms than in the others; nevertheless the slightly soluble or insoluble antimonials, kermes and the white oxide, may be administered, and better still in connection with the slight narcotics, such as aconite, belladonna in minute doses, or hyoscyamus.

Certain it is that emetics are excellent relievers of congestion of the bronchi. Vomiting, and even simple nausea, give rise to a deep perturbation in the local circulation, whence there follows, as proved by Pécholier, a considerable derivative action from the broncho-pulmonary apparatus. Nevertheless it is only in the acute cases, or those tenacious from the beginning, that this therapeutic measure need be resorted to.

The therapeutic indication yielded by the causes of congestive bronchitis, although less direct, is also very important. If for example, we are dealing with congestion in a tubercular patient, this diathesis by its presence is a further reason for action in order to forestall the degeneration of the products which congestion gives rise to around the tubercular foci; cutaneous revulsion will be chosen in preference to other procedures, and the antimonials, which are likely to irritate the intestines, and thus to open new routes of infection, or at least to aggravate the ulcerations which tuberculosis tends to produce of itself, should not be resorted to. Emollient fumigations, topical applications of the same nature, if needful, paintings with iodine, balsamic and sulphurous fumigations, such are the indicated therapeutic agents. In case of rheumatic patients, emollients in connection with local revulsives are to be especially advised, the counter-irritation being made on the skin and by the intestines. In a word, the etiological indications, although subservient to others, should be satisfied by the procedures required by the causal factor at work, without forgetting that, whatever the cause, it is in reality congestive bronchitis which is at the basis of the trouble.

I cannot conclude this lecture without referring particularly to the treatment called for in that tenacious form of bronchitis, which I have described: congestive bronchitis in the emphysematous, with angina and congestive irritation of the mucous membrane of the upper air passages, a variety of bronchitis which is rarely observed except in case of patients more or less rheumatic.

This affection is a very obstinate one, both as regards the phenomena accompanying the attacks and the recurrences. Revulsive agents act only as palliatives, and emollients are of no value. I have tested the administration of emetics, and the truth is that the diminution of visceral congestion, the tendency to perspiration, the general depression which accompany emetics, appear to be the most appropriate of all for overcoming the congestive erethism of the bronchi, so marked in the patients under consideration. But these unfortunate patients cannot be kept long enough in a state of permanent nausea, and the congestion returns and often in a more aggravated form when the medication is stopped. Therefore I have resorted to a medication which adds to

the decongestionating action of the nauseants a nutritive modification deeper and more capable of rendering permanent the acquired amelioration. I hence administer to these patients fractional, not large, doses of tartar emetic (.05 to .10 grammes) well diluted to facilitate tolerance. A teaspoonful of this mixture is given every hour, unless nausea prevents, and the administration is kept up for several days. Usually it has to be given for three days each week for several weeks in succession. To assure a cure I have sometimes deemed it useful to give a little arseniate of antimony, especially to patients in whom there exists disease of the heart as a complication of the bronchitis.

Typical Methods of Treatment Applicable to Congestive Bronchitis.

1. In case of congestive bronchitis in an infant cover the entire thorax with a linseed meal poultice, which is removed every six or eight hours. Every two hours administer one drop of tincture of aconite in syrup. Keep the bowels free by injections of oil or of glycerin.

2. In case of congestive bronchitis associated with beginning tuberculosis, order repeated sinapisms on the sides of the chest and on the back, alternated with revulsive frictions with ammoniacal liniment. In case of cough and insomnia give every hour a teaspoonful of a mixture containing tincture of aconite and syrup of poppies. Apply under the clavicle of the diseased side a blister, and in case of persistency in the symptoms touch the same locality with the actual cautery. The diet should be limited strictly for a time to soup and milk, all wine or exciting drink being prohibited. Confined, hot, dusty, atmosphere should be avoided. The temperature should be constant as well as the amount of moisture in the air.

3. In case of congestive bronchitis associated with disease and hypertrophy of the heart, rest in bed is indicated at the outset. Every three hours a teaspoonful of the following mixture should be administered:

℞	Extr. of Digitalis . . .	.05
	Extr. of Conium . . .	.10
	Powdered Ipecac . . .	.15
	Oxymel. Scillæ	30 grammes.
	Muc. Acac.	120 "

One to two pills like the following should be taken according to indication:

℞ Pulv. podophyl. 03
Extr. Bellad. 01
℔ ft. pil.

In case of obstinate constipation order 15 grammes of sulphate of soda, frequently repeated; or else in a cup of cold milk.

℞ Pulv. scammon 50
Pulv. jalap 25
℔ ft. chart. No. 1.
Milk diet strictly.

4. In case of congestive bronchitis associated with gout, apply here and there on the chest sinapisms. Give each morning a wafer containing powdered scilla (.10) and powdered phellandra (.25). Order with each meal seltzer water containing one-half a gramme of carbonate of lithia. Keep the bowels open by small doses of calomel (.20 to .25 grammes).

5. In case of congestive bronchitis in the emphysematous order (a) during the attacks small doses of tartar emetic repeated to nausea each morning for three consecutive days and continue for two to three weeks; rub the thorax repeatedly with a liniment composed of camphorated ammoniacal liniment and spirits of turpentine, or else with croton oil. When called for, administer a saline or drastic cathartic. Let the diet be of fruits, vegetables, milk, eggs and white meats. Vichy water is useful to counteract the local irritant effect of antimonials on the mucous membrane of the digestive tract. In the intervals (b) in the attacks give each morning, for five days in the week, 5 to 6 grammes of arseniate of antimony divided into milligrammes. Each night order a pill composed of extract of datura and powdered phellandra, āā .10 grammes. Tonic and non-irritating diet is to be ordered; sulphur fumigations each morning; the bowels to be kept free.

LECTURE VI.

CATARRHAL BRONCHITIS—ETIOLOGY AND SYMPTOMATOLOGY.

Before beginning the study of catarrhal bronchitis, I deem it necessary to recall in a few words what is meant by the expression "catarrh," a term which is frequently erroneously used because those who apply it do not understand the exact definition.

Either the word is of significance at all, or else it refers to an elementary lesion which is none other than a hyperemia of the secreting surfaces. Unquestionably it is not easy to prove that this increase in secretion is produced without change in any of the products of secretion; but what seems well established is the fact that in the products of catarrhal secretion, even though there be increase in the watery elements, we find no increase in the solid elements which belong to the secretion, any more than noteworthy alteration in them.

Without doubt the three elements, congestion, catarrh, and inflammation may be conjoined, in so far as we rarely find any one alone. But if the hyperemia necessitates and causes a greater afflux of blood than is normal, it is because of its being a secondary phenomenon. Even as congestion may exist without hyperemia, even so may a catarrhal state be present without congestion. And further, even as there are special causes of congestion, even so are there special causes of catarrh.

I will not dwell on the necessity there is of differentiating catarrh and true inflammation. The distinction which I drew between congestive irritation and inflammatory irritation is perfectly applicable here. Catarrhal irritation causes a secretory flux, inflammatory irritation alters the products of secretion, multiplies the elements, changes more or less the same products either by plastic infiltration or by purulent degeneration.

We have here, you see, an elementary lesion very different from that of catarrh, and I dwell on the distinction no longer.

Now this catarrhal lesion may be met with on all secreting surfaces. The mucous membranes are the surfaces chiefly affected, they are the elective seat of catarrh. The mucous membrane affected by a catarrhal irritation secretes freely an aqueous liquid, or, as some express it, a serosity in which water predominates mixed with a certain amount of mucin.

All the mucous membranes may be the seat of this species of irritation, rather functional than nutritive, so to speak; but the mucous membrane of the bronchi is most frequently involved. Whence many writers consider the word catarrh a synonym for irritation of the bronchial mucous membrane.

This elementary morbid lesion is not the exclusive property of mucous membranes, however; it belongs as we have stated to all secreting surfaces. We may meet on the serous membranes an irritation more or less hyperemic whence result exudations which resemble dropsy by the watery composition of the products, and inflammation by the acuteness of their development. We are dealing here again with secretory irritation comparable in every respect to catarrh of the mucous membranes, and, besides, being often united with it in the same pathological group.

I have thought it necessary to recall briefly these principles which belong to general pathology, so that you will have no excuse for confounding, as many do under the pretext that they often occur together, phlegmasia, congestion and catarrh.

Catarrhal bronchitis may involve the large and the small bronchi, and even as in case of congestion, it is a very different affection according as it occurs in the one or the other. Again, like congestion it may be active or passive; and the distinction to be made between these two forms rests on the same basis both for congestion and for catarrh. Active catarrh is a hyperemia due to secretory irritation, resulting from an irritation acting on the secretory element itself; passive catarrh is a hyperemia following on stasis of blood or of serum, and this stasis, by increasing the tension in the neighborhood of the secretory surface, determines on this surface a species of exudation or of serous exosmosis; it is to this form in particular that the term *bronchorrhea* is applicable. The mechanism is, we thus see, very different in each instance.

In a word, there exist two forms of hyperemia of the bronchial mucous membrane—a first, active by direct secretory irritation; a second, passive, or increase of exosmosis by exaggerated vascular tension.

We will, as in case of congestive bronchitis, review the symptoms of catarrhal bronchitis, then its causes, varieties, evolution; and from this study we will draw the indications on which the diagnosis depends. Finally, we will deduce the practical consequences, by stating the therapeutics applicable to this form of bronchitis and the agents capable of satisfying the indications.

Symptoms of Catarrhal Bronchitis.—We will at the outset consider the subjective sensations, and these are practically *nil* or insignificant. At times the affection is complicated by certain neuralgic pains, either intercostal or elsewhere; but all pain may be lacking.

The functional troubles are very slight, or at least in accord with the extent and the degree of the catarrhal lesion. Almost nothing in the simplest and least extensive forms, the dyspnea may become intense in other forms; in these latter instances, indeed, the catarrh, having involved a considerable part of the bronchi, fills with its secretions the respiratory passages, and diminishes in so far the field of hematosis.

Cough is present, and is moist in accordance with the catarrhal secretion, the cough, however, is far less than in case of dry irritation. More frequent in the initial stage when the secretion has not answered the irritation which provokes it, the cough diminishes and becomes less painful afterwards, when it effects the expulsion of the moist products of bronchial secretion. This cough is full, sonorous, and marks by a species of bubbling the conflict between the air and the catarrh in the bronchi. It causes, besides, a sufficiently characteristic expectoration, salivary, fluid, transparent or foamy, opaline or citron yellow, rarely viscous and thick. It is ejected usually without much effort, often by a simple spitting; in such cases the patients may feel the liquid rise in the trachea and reach the pharynx. Exceptionally the cough is spasmodic, and this is dependent not on the hyper-secretion but on the nature of the irritant.

The physical signs yielded by auscultation are characteristic enough. These are moist râles which exist over the site of

the disease. When the irritation, purely catarrhal, produces an abundant secretion, fluid and readily expectorated, then large and fine râles are heard, moist, however, and sub-crepitant of varying calibre; while, on the other hand, if the products were viscous, the râles would be dry and vibrating.

You know that it is for this reason that the attempt has been made to make the two divisions of bronchitis with moist râles and bronchitis with vibrating râles; now of these two varieties, the latter is a mucous bronchitis to which the name of dry catarrh has been given, and it is generally only a congestive bronchitis, while the former belongs truly to catarrh and deserves the name of catarrhal bronchitis.

Percussion rarely yields any evidence in case of catarrhal bronchitis.

The symptoms from the lungs themselves are negative; that is to say, the pulmonary parenchyma is not altered, and there is neither dullness on percussion nor souffle on auscultation.

The mucous membranes of the upper air passages, however, furnish evidence of the part they play in the affection, and especially by coryza and pharyngitis. These irritations are themselves catarrhal and manifest this character by a certain congestion of the mucous surface and by a more abundant secretion; from the side of the larynx there is some change in the voice.

The general phenomena vary according to the cause and also according to the extent and the depth of the catarrhal bronchitis. In the simplest forms of the disease they are more or less lacking; and this constitutes one of the varieties of what is commonly called a cold. Catarrhal bronchitis is almost always accompanied by a febrile reaction, often light enough not to attract notice, and then again characterized by chills, high temperature, abundant perspiration. At the same time there prevails a low state of health, at first constipation predominating and then diarrhea. Hence good observers have thought that catarrh had a tendency to progress from above downwards, and beginning in the respiratory tract to finish in the digestive.

LECTURE VII.

CATARRHAL BRONCHITIS—CAUSES AND VARIETIES.

1. The most simple form of catarrhal bronchitis is that to which the term *rheum* (ῥευμα, a running) has been applied. It has an initial stage of greater or less duration, often totally lacking, and characterized by a dry (perhaps congestive) irritation of the bronchial mucous membrane. In any event this initial stage is accompanied by slight or ephemeral fever followed by perspiration. The expectoration, at first *nil*, is soon established, and is abundant, more or less limpid, and is accompanied by an easy cough.

This affection, however slight, has a certain tendency to persist. The fact alone that the local character of this disease consists in a simple exaggeration of a normal secretory function seems to render return to the normal use of this function more difficult. In fact, the slightest occasional cause is sufficient to renew this simple functional exaggeration, which constitutes the element catarrh; and where the subject in whom this affection recurs is at the same time under the influence of a constitutional diathesis, this in turn contributes to feed or favor recurrence of a catarrh once contracted, so that the duration becomes, as it were, interminable.

2. A further variety differs only from the preceding in that the elevation of temperature is a trifle more marked, and the duration longer, at least one week. The patient must cease from work, the fever is continuous with evening exacerbation. The bronchial localization is more pronounced, more general and deeper, as witness the râles heard on auscultation.

The fever is entirely characterized by the remission, the defervescence and by what are called the critical eliminations. From the fifth to the ninth day these crises recur either by the skin (diaphoresis), or by the urine (diuresis). Towards the seventh day defervescence occurs. In a word, this form is not different from the preceding except that the local and the

general manifestations are more severe and the duration of the fever is more marked.

3. *Influenza* is nothing more than a catarrhal fever, epidemic in character; it is a pyretic affection, epidemic and contagious—perhaps virulent—probably bacillary.

It is a febrile affection, I have stated, and a fever which, in its most perfect evolution, lasts for three weeks. Preferably it pronounces itself as a catarrh of the respiratory tract, although occasionally it affects the digestive mucous membrane.

The symptoms are: at the outset general malaise with depression; next irregular chills and a more or less remittent fever, usually with evening exacerbation. Often these exacerbations are marked enough and are accompanied by a constitutional depression deep enough to give the appearance of a grave pyrexia. Nevertheless the affection does not resemble typhoid; it lacks the depression and cerebral torpor characteristic of typhoid patients.

The principal localization of this pyrexia is on the bronchial mucous membrane, where it assumes the catarrhal form. On auscultation we hear mucous râles disseminated in the bronchi, large and fine mingled, extended over a variable portion of the thorax and often over the entire bronchial system.

Almost always the catarrh invades concomitantly the other mucous membranes. From the outset the tongue is coated; soon it clears and the intestine becomes the seat of a true catarrhal diarrhea. The pulse, which is frequent, remains variable. Secondary congestion occurs in different organs, sometimes, indeed, true hemorrhages. The lungs, liver, spleen, are the seat.

Finally, from the side of the nervous system, there exists a state of asthenia, rather than of true adynamia. In typhoid fever, the nervous condition seems to result from the poisoning which affects the subject from without or from the digestive apparatus; in influenza this poisoning exists as well, but its source appears to be rather the nutritive alteration of the muscles. The ptomaines of typhoid are further of a different and more septic nature. Whatever the case the asthenia differs notably from the adynamia of typhoid fever.

Delirium is often present in the aggravated forms of the affection, and this delirium is more active than that of typhoid; occasionally there are marked neuralgic pains and even con-

vulsive phenomena. The perspiration is always more or less abundant, and determines often eruptions.

Complications from the side of the respiratory tract are not rare; the various kinds of bronchitis, including the capillary, broncho-pneumonia and even true pneumonia occur; and these affections are then exceptionally grave, not alone because of the ease with which they extend and become generalized—not alone, further, by their tendency to become inflammatory and even septic—but also because of the general state of critical asthenia which is always an accompaniment.

I do not intend to sketch the whole history of the affection, but only by recalling its general traits to show you the part which catarrhal bronchitis plays. I want also to impress upon you the other pyretic affections during the course of which catarrhal bronchitis may occur and with which it should not be confounded. I have spoken of typhoid fever in the course of which we meet congestive bronchitis commonly, and the same holds true of measles.

4. *Catarrhal bronchitis propagated from the mucous membrane of the upper air passages.*—Coryza, as we have stated, often accompanies catarrhal bronchitis; frequently indeed it is the starting point, so much so that the opinion has been held that bronchitis is an extension of the catarrhal irritation of the mucous membrane of the nose to that of the bronchi. Certain kinds of coryza appear to have a special aptitude for such a propagation; such is catarrhal spasmodic coryza known as hay asthma; the catarrhal laryngitis of false croup also is often enough complicated with catarrhal bronchitis.

5. *Catarrhal bronchitis of pulmonary origin.—a.* Catarrhal bronchitis is often associated with the various neuroses of the respiratory apparatus. The catarrhal irritation almost always results in a measure from the attacks of asthma and seems to terminate them; at the end of the dry and spasmodic phase secretion is produced in the bronchi, and manifests itself by moist râles and by expectoration. Now the catarrhal irritation thus established may become more or less permanent in the asthmatic, and even though it be not permanent it seems to recur with greater facility with each attack.

The same holds true for whooping cough. At the end of the attacks there results a catarrhal expectoration and this

may amount to a true catarrhal bronchitis, and so remain permanently.

b. In case of *emphysema* bronchial congestion is more frequent than catarrh, at least in the acute stage; nevertheless the repetition of the congestive attacks leaves behind a chronic catarrh.

c. Pneumonia has a close affinity with catarrhal bronchitis. There is even a form of pneumonia which has secured the name of *catarrhal pneumonia*, owing to the chief *rôle* which the catarrhal element plays in its evolution. In a paper which I published on this subject (*Archives de Médecine*, 1862) I endeavored to sketch the characteristics of this species of leucophlegmasia, which is not a pneumonia complicated by bronchial catarrh, as many have thought, but a species of hyperemia at the same time catarrhal in the bronchi and congestive in the parenchyma itself of the lung.

Further, around each true pneumonic focus there is a zone of active serous infiltration, which is only congestion, the mechanism of which is hyperemia, and this is of the nature of catarrh. Finally, above all, after hepatization, the lungs are the seat of a hyperemia more or less congestive, more or less secretory or derivative; more congestive before hepatization, it constitutes the first period of the pneumonia; more derivative afterwards, it is the sign of resolution.

Often at the autopsy, you have seen these peri-inflammatory or post-inflammatory zones, which on section give issue to an abundant serosity scarcely mixed with blood; and this proves how the alveoli and the intercellular spaces of the pulmonary parenchyma are invaded by the serum. Now this same process goes on at the same time at the surface of the bronchial mucous membrane around the inflamed pulmonary lobule. Often even the congestion extends beyond the lobule to the pleura and then occur those slight attacks of pleurisy which you see so often accompany pneumonia during the period of defervescence.

From the side of the bronchi there exist râles and expectoration. Sometimes I have found in the expectorated matter coagulable albumin, and this is seen in particular in the catarrhal expectoration which follows so abundantly on thoracentesis.

d. In *pulmonary edema* two things may happen: either it

is one of those acute edemas in which the secretory irritation plays the chief *rôle*, active edema *par excellence*, and in this instance the secretory irritation may extend from the pulmonary parenchyma to the surface of the mucous membrane; the resulting catarrh is acute, more or less intense and extensive; it may even simulate suffocative catarrh; or else, in other instances, the edema is passive, produced, for example, by a mechanical obstacle in the circulation, hypostatic edema as it is called, and the resulting catarrh at the surface of the bronchi is both passive and mechanical. All the causes of slow and progressive dropsy may at any time be accompanied by this torpid form of catarrhal bronchitis.

e. In case of diphtheria we often observe a prodromal period of catarrhal bronchitis; above all in the infant I have often seen this catarrh prelude and precede by some days the appearance of the false membranes.

Catarrhal hyperemia is also met with in diphtheria at the time when the mucous membrane prepares to eliminate and to throw off the false membranes. It is understood, of course, that the catarrhal secretion plays a part in the expulsion of the epithelial layers infected by the diphtheritic products even as it assists in the elimination of the slimy products of the digestive mucous membrane. When diphtheria presents the characteristics of catarrhal bronchitis, when we find moist râles and expectoration, then there is ground for giving a relatively good prognosis.

f. Nothing is more common, we have stated, than congestive bronchitis around tubercular foci; catarrhal bronchitis, although less frequent, is met with during the course of *tuberculosis*. It arises, at the outset, around the foci, and it is certain that, even as in case of congestion, catarrhal bronchitis often precedes the eruption of the tubercle.

It is a fact that the epithelial desquamation which accompanies the catarrhal process, in case the products are retained in the air passages, leads to a favorable soil for the reception and the multiplication of bacilli, and it is hence apparent that popular opinion in regard to a neglected cold is not without foundation. Finally, catarrhal bronchitis always accompanies to a degree the transformation or the softening of the tubercle, and it is then perhaps due to the passage of the eliminated

products over the bronchial mucous membrane, and to the direct irritation of this surface.

Whatever, still, be the influence of the tubercle in increasing the catarrhal irritation in the bronchi of the phthisical, this seems to be due less to the presence of the tubercle itself than on the presence of a diathesis. Whence it is why catarrhal bronchitis is found by preference in scrofulous individuals and in the torpid varieties of phthisis; while in the active forms, in case of rheumatics in particular, the bronchial attacks are especially congestive, even as they recur more frequently and tend less to become chronic.

g. I have already noted in connection with pneumonia the relation existing between *pleurisy* and catarrhal bronchitis. I have noted this even in a case of dry pleurisy where the patient, a man, without having presented any evidence of exudation, was relieved greatly of a basal pleurisy after having expectorated during an entire night an abundant serous secretion, that is to say, catarrhal.

h. Ganglionic phthisis, or tuberculosis of the peri-bronchial ganglia, is readily complicated by catarrhal bronchitis. Often it results from reflex irritation; at times it depends on vascular compression, and again on irritation of the vaso-motor or the mediastinal nerves.

Finally, all the organic affections of the lung, and, we may add, of the entire thoracic cavity, are capable of causing catarrhal irritation of the bronchial mucous membrane, either through vaso-motor disturbance, vascular compression, or more or less direct secretory irritation.

6. Catarrhal bronchitis is frequently associated with *cardiac disease.* Those patients are the more likely to become so affected than others owing to the alteration in nutrition of the bronchial mucous membrane which results from imperfect circulation. Whence the frequency of colds and their gravity and persistence in case of cardiac disease.

Patients with cardiac disease often are affected concomitantly with a passive bronchial catarrh; this is connected with the stasis of blood which we note in an early period of cardiac disease, especially the mitral and tricuspid variety; if to this catarrh a factor of secretory irritation is added, catarrhal bronchitis becomes established. Finally, the low state of health into which these patients eventually lapse, in particu-

lar those subject to albuminuria, leads to edema, at the outset acute, and for the same reason to catarrhal bronchitis.

Dyspeptics often also present catarrhal bronchitis, and similarly sufferers from affections of the *liver*. In case of *nephritis* the irritation of the bronchi is caused by the abnormal elimination of urea and its derivatives, and from this irritation there readily results catarrhal bronchitis. Often accompanying nephritis we witness alarming attacks of suffocative catarrh. I will cite an interesting case soon when speaking of scarlatina.

Catarrhal bronchitis is also a frequent accompaniment of the majority of the morbid *cutaneous* manifestations, whether because of the physiological relations existing between the skin and the bronchi or for other reason we cannot state.

It is in the course of the *eruptive fevers* that we see this most frequently; indeed catarrhal bronchitis is an integral part of one of them—*measles*. Without question the bronchitis of measles is not always catarrhal: it may become congestive, and even a graver form still; but it is certain that it begins by moist secretion from the upper air passages, no matter what the congestion which is superadded.

This bronchitis has also a great tendency to become generalized and to extend in depth even so far as to become a catarrhal pneumonia. You know, further, how readily it may alter into tubercular catarrhal bronchitis, especially if the subject is at all so predisposed.

In case of simple *scarlet fever* catarrh is infrequent: but the renal complications of scarlatina are often associated with congestive or catarrhal bronchitis, suffocative and subacute.

I would mention in this connection the case of an infant I was attending some time ago during the course of scarlet fever. Defervescence had occurred, and everything was progressing favorably except for a slight quantity of albumin in the urine. This fact, however, caused me to give a guarded prognosis. A few days afterwards the child was seized by a suffocative catarrh which killed it in a few hours.

I will not dwell particularly on bronchitis accompanying *typhoid fever*, since it rather assumes the congestive than the catarrhal form. Two causes in especial tend to provoke the bronchitis: the passive stasis of the pulmonary circulation

and the greater or less change in the blood which is peculiar to the disease.

I will say nothing more about the *eliminative* form of bronchitis; after what I said under the subject of congestive bronchitis it is sufficient to recall the fact that certain medicinal agents, eliminated by the bronchial mucous membrane, cause a greater or less irritation. Since this action is often utilized therapeutically, I will return to the subject when speaking of treatment. Remember only the principal agents which are likely to thus produce catarrhal bronchitis: certain salts of potassium, especially the iodides, all the balsams and the sulphurs.

I have already stated that there are certain catarrhs strictly diathesic; this cannot be denied in connection with scrofula, and we see many infants in whom other manifestations of scrofula, such as impetigo, coryzas, anginas, alternate with more or less torpid attacks of catarrhal bronchitis.

Rheumatics are not protected. Although in rheumatism and gout we notice rather congestive than catarrhal manifestations, the latter are also met with especially before the diathesis has acquired or after it has lost its acuteness or at the time when the patient's constitution begins to weaken.

7. Age, sex, etc., need hardly be considered in the etiology of catarrhal bronchitis. As for the influence of season I could not add to your knowledge, for I have often laid stress on it.

LECTURE VIII.

CATARRHAL BRONCHITIS—CLINICAL HISTORY AND DIAGNOSIS.

What is the evolution of catarrhal bronchitis? It does not always bear the same characteristics; active or passive, acute or chronic, it may appear under very different guises. Its simplest form is that of a slight rheum, lasting for a few days, accompanied by scarcely any fever and deserving truly the name *ephemeral catarrhal fever*. The fever may be more pronounced, lasting for seven days to three weeks and over, and yet the characteristics may not be specially altered.

The pyretic, serious form of catarrhal bronchitis is a better defined condition both etiologically and symptomatically. It consists in: 1. a period of invasion, characterized by an acute bronchial catarrh with a general state of profound depression. 2. A period of febrile reaction more marked but less adynamic than typhoid fever in general, coinciding with more pronounced phenomena of bronchial irritation, and more catarrhal as well, as is proved by the expectoration. 3. A final stage marked by excessive perspiration, the defervescence going on by degrees up to complete recovery.

This typical course is often varied by numerous irregularities, which may modify considerably one or another of these periods. Thus the type may change from remittent to intermittent. This is especially true of the third stage; often indeed, as has been noted by Dr. Carrière, the intermittence is such that it may be looked upon as a special morbid entity calling for quinine, and this too aside from any paludal influence. It goes without saying that this type is peculiarly likely to be met with in subjects who have previously had intermittent fever.

I will not enter at length upon the history of this affection, since it is well treated of in our works on pathology. I only desire to add that it is often serious and sometimes fatal;

usually, except in the very young or old, it is more distressing than dangerous. In infancy, the patients are likely to die of broncho-pneumonia, and this sometimes happens in adults; in old age it is particularly asthenia which is met with and which is to be feared. In such instances it may be complicated by a true typhoid condition. It is finally an affection dangerous to those already subject to broncho-pulmonary affections, to the asthmatics, for instance, and to the tubercular, in whom it leads to the formation of new foci and especially hastens the evolution of the old.

Whilst it is common enough to see congestive bronchitis change into catarrhal, it is quite rare that we find catarrhal altering into congestive bronchitis. This is possible, however, and the transformation rarely stops at the congestive form but reaches often at once the inflammatory. This transformation may be the result of imprudence on the part of the patient or even to premature attempts at substitutive therapeusis.

It sometimes happens that catarrhal bronchitis, without being either epidemic or contagious, becomes remittent or intermittent, and this too not only as regards its general febrile phenomena but also as regards the local lesion. Even as in intermittent fever, variations in pyrexia may exaggerate one or another of the periods, so in some sufferers from catarrh the severity of the chill, in others the acuteness of the fever, in others the abundance of the perspiration, may suggest a pernicious element.

The suffocative form of catarrhal bronchitis has always received due notice from writers, but it has always been more or less confounded with the inflammatory or congestive forms of this disease. The best known type is that seen in cases of acute anasarca.

There is at present in our wards a patient with catarrhal bronchitis, who expectorates habitually a great quantity of clear fluid. For some days this expectoration has been extreme, and asphyctic phenomena show themselves, whilst the air penetrates with difficulty into the thorax. The bronchitis became suffocative without our being able to determine the cause of the increase in his symptoms. It may be due to a vaso-motor irritation, such as compression of the pneumogastric, or else to a direct vascular change

Whatever our doubt as to the cause of such phenomena, I want to remind you that, the fact of excessive secretory irritation once well established, the therapeutic indication is clear; you will understand, hence, how important it is to determine the exact form, whether congestive, inflammatory or catarrhal, of such phenomena. Besides, this intra-bronchial serous hyperemia may vary a trifle in its acuteness and its morbid physiognomy, according as it is a question purely of a dropsical hyperemia, or, on the other hand, of a more or less active fluxion. This, in chronic dropsy, is pulmonary edema itself. A serous hyperemia, slow and chronic, occurs on the bronchial mucous membrane; and in acute anasarca, the form in particular which is seen in albuminuria and in convalescence from scarlet fever, there is shortly produced a serous secretion in the respiratory track, sometimes even albuminous, and the patients die speedily as though from an inundation of the bronchial tubes.

The *chronic* form of catarrhal bronchitis is generally diathesic. You have seen how often the scrofulous readily become subject to chronic catarrhal bronchitis; therefore when we meet with a persistent bronchial catarrh it is always well to hunt for a scrofulous origin.

Scrofula, however, is not the sole diathesis which disposes to the chronic form of catarrhal irritation of the bronchi. Rheumatism is certainly less frequently a cause; its preferable manifestation is rather acute catarrh or the congestive form. There is, however, a further pathological relation which it is necessary to bear in mind, and this that existing between catarrhal irritation and certain cutaneous manifestations: thus bronchial catarrh is frequently met with in connection with eczema, prurigo, lichen; and this same relation may be noted between cutaneous affections and spasmodic bronchitis.

Diagnosis of Catarrhal Bronchitis.

When we began the study of this affection I recalled the characters which separate the catarrhal from the congestive and from the inflammatory element, and we saw that the expectoration constituted one of the principal points of distinction.

None or scarcely any at all, and then viscous and adherent

in congestive bronchitis, the expectoration is purulent or muco-purulent and varying in amount in inflammatory bronchitis. In catarrhal bronchitis the expectoration is profuse, fluid, cloudy or clear, like the saliva.

By auscultation we may establish the seat, the extent and above all the depth of the catarrhal lesion; the febrile state, its acuteness and above all the type it affects, measure the gravity of the affection and indicate often the etiological conditions on which it depends. The intensity of the general reactionary phenomena, the asthenia which is marked from the outset, the easy generalization of the local phenomena will distinguish the epidemic form; the absence of true adynamia, the slight importance of the gastro-intestinal phenomena, the predominance of the bronchial signs, these are the points which will differentiate from typhoid fever.

It is often a delicate point to determine at the outset catarrhal bronchitis from measles. In the beginning measles is announced by a catarrhal bronchitis, and this may last from three to five days; and, not very rarely, towards the third day, the temperature falls notably to rise again at the time of eruption. Here is a diagnostic difficulty which we should always bear in mind. There are, however, shades of difference between these two morbid states; rubeolic bronchitis is as much congestive as catarrhal; this characteristic is determined by the redness which from the beginning it impresses on the pharynx, by the acuteness of the coryza and the conjunctiva.

As for the diagnosis of the causes of catarrhal bronchitis, we have seen that they are to be sought in the condition of the mucous membrane of the upper air passages, in the state of the lungs, in diphtheria or tuberculosis, for instance, or else in the viscera, such as the heart, liver, kidney; the examination of these organs will soon prove the share they have in the evolution of the disease. The same holds true of the eruptive fevers, intoxication and diatheses, causes on which I need not longer dwell.

LECTURE IX.

TREATMENT OF CATARRHAL BRONCHITIS.

What elements of catarrhal bronchitis ought our therapeusis to be aimed at? You know that in the determination of the indication, the category of elements which it is essential to bear in mind is that which determines the form of the disease, formerly called the physiological element, as being the one which we can the most effectively attack.

Here this element is easy to determine with exactness: catarrhal bronchitis belongs to the class of secretory alterations; it is above all a quantitative alteration; in a word, it is a diacrisis which may be either acute or chronic.

It is easy hence to understand that the indication to fulfill is a triple one:

1. Diminish the excessive secretion; 2. Eject the secreted products, or at least favor their expulsion; 3. Modify the secretion itself.

a. There are a number of means at our disposal whereby we may diminish bronchial secretion—at the outset the decongestive agents.

Although catarrhal irritation is not necessarily connected with congestive irritation, it is established that the secretory product of catarrh is derived from the blood which irrigates the secretory surfaces; consequently, whatever abates the circulation of the bronchi will diminish at the same time the source of the bronchial secretions.

There is still another reason for attacking the catarrhal irritation by means of decongestive agents, and this is that however catarrhal it be the irritation induces and leaves behind it a blood stasis which favors in turn the production of catarrh. Whence the double utility of fighting indirectly the catarrhal element by attacking the congestion.

We saw in one of the preceding lectures how this is possible, either by means of emollients, or by nauseants, or by re-

vulsives, which are so efficacious in case of congestive bronchitis. Although emollients seem to be of less efficacy against catarrhal than they are against congestive irritation, it is nevertheless well to use them, and sometimes they will fulfill the indication. After having removed all the conditions capable of provoking a new irritation, even as I have shown in the lecture on the treatment of congestive bronchitis, we may in the simple forms prescribe emollient drinks.

Some writers, the Germans in particular, have deemed it necessary to do as much as possible without liquids both in medication and in diet, in case of catarrhal affections, the aim being to diminish absorption and consequently to retain in the blood itself the source whence the secretions obtain their materials. This theoretical view is not without usefulness. Still it could only be exact if the secretory action was absolutely dependent on both the quantity and the quality of the blood in particular; now we know that this is not the fact, and in true catarrhal irritation we are rather dealing with the functional irritation of the secretory agents, glands and surfaces, than with the materials brought to them, either indirectly by the blood or more directly still by the routes of absorption.

We may give, then, in catarrhal bronchitis, emollient drinks, but fumigations are preferable, the topical action of which is most marked. Fumigations by infusions of emollients are very useful. Fomentations and cataplasms on the thorax, so useful in case of congestive bronchitis, are of no utility in case of catarrhal bronchitis.

Catarrhal irritation attacks secreting surfaces and scarcely affects parenchymatous tissues; hence the use of deeply penetrating revulsives is not indicated as in case of congestive bronchitis. This is the reason why we obtain the best results from diaphoretics. With this end in view Laennec gave punch to cases of recent bronchitis, hoping thus to abort the affection.

Superficial revulsives, rapid and transient in action, may also be used. Cutaneous revulsives, such as sinapisms, irritant frictions, alcoholic or ammoniacal, if need be a few blisters, especially those which are left on only a few hours and are then replaced by poultices. This practice is all the more useful here, because the blister, in order to be efficacious, should cover

a large surface, and you know how important it is not to leave large blisters in contact with the skin to avoid cantharidal poisoning and vesical troubles to which they may give rise.

Intestinal revulsives, in particular those which act on the mucous membrane and on the glands of the intestines, are doubly useful. Their action on the mucous membrane of the intestine is derivative from that of the bronchi; besides the loss of fluid which they provoke tends to diminish the exaggerated secretion. With this end in view the dialytic purgatives may be used to advantage; the neutral salts, sulphate of soda and magnesium, the alkaline citrates, tamarinds, pulsatilla, and, if need be, calomel.

When it is necessary to act quickly and energetically, as in the serious forms, and especially in the suffocative, the drastics are indicated; aloes, jalap and scammony, croton oil. This drastic medication would also be useful where the secretion, without being excessive, is obstinate in duration, and where we must strike hard to overcome a bad habit.

As for the nauseants it is only the serious forms of catarrhal bronchitis which require them, at least as decongestive agents, for we will soon see that they play a very important *rôle* as expectorants.

We may further diminish the secretion of the bronchi by attacking the nervous excitation which accompanies it and often provokes it. All the depressants of nervous action are here indicated. But, like the decongestives, they exert on the secretion only an indirect and a little uncertain effect. Aconite, hyoscyamus, conium, are often used, as well as the weaker preparations of opium, etc. These agents, as also arsenical preparations, will be studied particularly under the subject of spasmodic bronchitis.

The aromatic umbelliferæ constitute with the antispasmodics the transition between the agents which moderate innervation and the derivatives. They can only be used when the bronchial discharge, having lost its acuteness, tends to become chronic.

We are thus naturally brought to speak of the agents which directly diminish secretion. In the first rank come opium and its compounds—laudanum and morphia. In this connection, however, opium is much inferior to belladonna and all the solanaceæ, hyoscyamus, conium, and especially datura;

their alkaloids, atropine, hyoscyamine, cicutine and daturine seem to be less efficacious.

These different drugs are best administered in small doses, frequently repeated in solution, pill or powder. The extracts may be given in doses of five to twenty centigrammes, divided into pills of two to four to five centigrammes. Ipecac in very small dose may diminish bronchial secretion; the nauséants in general, especially antimonials, in small dose, have the same effect.

These various agents have in particular the purpose of diminishing the bronchial secretion; some are opposed to excretion, whilst others favor it.

b. The second capital indication consists in favoring the expulsion of the secreted products. The therapeutic agents which fulfill this aim are known by the characteristic name of *expectorants.*

The great majority of these agents are above all capable of modifying the products of secretion and of rendering them more fluid, and also of provoking contractions either of the bronchial muscles or of the adventitious expiratory agents, the conjunction of which is necessary to effect expectoration.

In the first rank we may mention acidulated drinks, the nitrates of potass and soda, polygala, squills, gum ammoniac, even jaborandi; and in the second rank, the nauseants, and above all the emetics, ipecac in small repeated or in one large dose, antimonials in general, kermes, arseniate of antimony and white oxide.

Polygala is given especially in infusion; squills in powder of from five to fifty centigrammes or in the shape of oxymel scillæ (ten to thirty grammes); gum ammoniac, one to five grammes, in emulsion, or mixed with the oxymel to make a pill; ipecac one to two grammes, in emetic dose, or twenty centigrammes, repeated; kermes in tablets, and arseniate of antimony, two milligrammes to one centigramme.

Excitant fumigations of chlorhydrate of ammonium and of carbonate of ammonium may be of great utility, both in awakening the sensibility of the mucous membrane and in provoking the expectoration of the products of bronchial secretion.

Jaborandi should be reserved for those cases where there is much fluid in the bronchi. It may be given in infusion; the injection of pilocarpine is still more rapid and more certain.

c. The third indication consists in so modifying the mucous membrane that it shall cease to pour out in excess liquid into the bronchi.

I have told you how tenacious and likely to recur is catarrhal irritation of the mucous membrane; and the bronchial mucous membrane constitutes no exception. So true is this, that the word catarrh means to the majority of people something chronic. This is the reason why we must use energetic modifiers, such as the balsams and the sulphurs, or alterative substitutives such as the antimonials.

These latter agents, to range them in the order of therapeutic activity, comprise the white oxide of antimony, turpeth mineral, and tartar emetic. The white antimony may be given in the dose of two to four grammes; kermes in the dose of thirty to forty centigrammes; and tartar emetic in from five to twenty-five centigrames, repeated as is indicated in the third lecture; the yellow sulphate of antimony in the dose of thirty to forty centigrammes.

There are many balsams which may be used to advantage in catarrhal bronchitis. I warn again, however, that it is well to be careful at the outset with this medication. The balsams always excite to a degree the mucous membrane of the bronchi, and thus the affection might be aggravated, if they were employed too soon or too strong. They may, as I have stated, transform a catarrhal into a congestive bronchitis, and this is far from being an advantage; still, when used opportunely and in moderation, they may check the hyperemia and restore the normal.

This medication should only be used in case of the torpid and chronic forms. The agent most usually employed is turpentine, and this is generally only applicable to the above forms; it is best to begin with resin capsules, and only later to order capsules of the essence of turpentine. Myrrh, benzoin and styrax are rarely used; balsam of Peru and of Tolu is often used. Tolu particularly is most useful and very agreeable. The essence of citron has also been given. The preparations of camphor are but little ordered. Formerly gum ammoniac was much used; and energetic agents are found in the ammoniacal salts. The carbonate and the benzoate of ammonium may be given in the dose of .25 to 2 grammes. The action of creosote is similar to these agents.

After the balsams come the sulphurs. The usual method of administering them is in natural sulphur waters, which are ordered in the morning fasting, pure or, better still, mixed with a quarter or a half the quantity of hot milk. The best waters are, in order, that of Cauterets; of Enghien; of Saint Honoré; of Labassère; of Eaux-Bonnes. Further still, artificial sulphur waters may be ordered, and these waters may be used as gargles, fumigations or pulverizations.

LECTURE X.

INFLAMMATORY BRONCHITIS—VARIETIES AND SYMPTOMS.

If we were writing a monograph on bronchitis, then the study of the inflammatory form ought to detain us as much as the other forms together; but I only aim here at pointing out to you the boundaries which separate this form from the others, and above all to show you in what way they are related, in order that you may be enabled to differentiate the pathology of these various morbid forms. For further information I must refer you to the classical works at your disposal and especially to the articles which have recently appeared in our cyclopedias.

The care which I took in the preceding lectures to differentiate catarrhal from both congestive and inflammatory bronchitis renders it unnecessary for me to insist further on this point. Let me recall, however, before proceeding further, that the inflammatory form unites in itself both congestion and catarrh with something else superadded. Inflammation resembles congestion in so far as there exists sanguineous stasis and plastic exudation, and as for the catarrhal process it differs from it in that there results a fibrinous exudate and by the addition of neocytes incapable of life except amidst degeneration—that is to say, there is superadded pus. There is present, then, in inflammation more and something different from what both congestion and catarrh entail, and this is the reason why I endeavor to uphold the separation of these diverse elements, formerly differentiated clinically, and which physiological analysis allows us to-day to distinguish more accurately than was formerly the case.

Thus differentiated from congestive and from catarrhal bronchitis, inflammatory bronchitis, strictly so called, is of far less frequent occurrence than was formerly held to be the case. It is, nevertheless, worthy of holding a high rank in this study and comprises numerous varieties: at the outset

catarrh of the large bronchi, and catarrh of the fine. This latter variety, even as was the case in the preceding forms, both the catarrhal and the congestive, plays a large *rôle* in inflammatory bronchitis; and on this point I will have occasion to insist.

Inflammatory bronchitis may be acute or chronic, like all inflammations. As for the varieties called dry bronchitis and moist bronchitis, we need not further occupy ourselves, the first being nothing more than congestive bronchitis, and the second only catarrhal bronchitis.

These matters being understood, I shall proceed to make as careful a study of inflammatory bronchitis as I have of the other varieties, bearing always in mind the methodical analysis of the elements of the disease and the practical applications of which you should always be cognizant and which are my chief aim.

Symptoms of inflammatory bronchitis.—The subjective phenomena belonging to inflammatory bronchitis are a feeling of retro-sternal pressure which sometimes becomes a sharp pain with a sensation of more or less burning. It is noteworthy that this sensation is less frequently marked than it is in case of congestive bronchitis: at any rate, when it is acute, it is less persistent; in a word, it seems to be more dependent on the acuteness of the congestion than on the inflammatory process.

The objective signs are functional derangements which are in relation with the extent of the lesion along the bronchial tree. These are cough and dyspnea, and these scarcely differ at all from what we have noted under the other forms of bronchitis.

The expectoration, on the contrary, is very significant; it is scanty at the outset, but it soon becomes more abundant than in simple congestion; furthermore, it may for a time simulate the characteristics of the catarrhal form, which you are familiar with, since I have so recently described it and you have seen it so often at the bedside of patients; still, more viscous, the expectoration soon takes the purely muco-purulent character—that is to say, it is greenish, adheres to the vessel in which it is expectorated and falls into a more or less homogeneous mass.

The physical signs are less characteristic but not without

value. Percussion is negative. On auscultation râles of various calibres are heard at the outset; soon sub-crepitant râles, of a calibre proportionate to the size of the bronchi in which the inflammation is seated, are heard, and finally they are the only ones detected. Loud, moist, and bursting are these râles when in the large bronchi, and in the fine bronchi they are small in calibre if the air penetrates into the smaller bronchi, and they become less and finer as the bronchi are rendered impermeable by the inflammatory process.

The phenomena from the side of the upper air passages are, in general, less marked; the deep inflammatory form has less tendency than the preceding to affect the contiguous mucous membranes. The same does not hold true as regards propagation to the pulmonary parenchyma; true inflammatory bronchitis is frequently complicated with broncho-pneumonia.

Fever is constant in inflammatory bronchitis; it is present from the start, is often quite acute at the time when the lesion passes from the period of dryness to the period of secretion, and generally at once begins to decline. This also holds true in proportion to the extent, and especially to the depth of the inflammatory process. The temperature reaches its limit when the sanguineous stasis begins to complicate the anhematosis due to the bronchitis and then there is tendency to asphyxia.

The symptomatology of inflammatory bronchitis may then be resumed into the following three elements: 1. First, the inflammatory secretion which is muco-purulent and sharply differentiates this form from the two preceding; 2. The more or less serious pyretic state, which is always marked, at least at the beginning of the affection; 3. The always pronounced dyspnea, the greater the more extensive the affection, even to the degree of asphyxia.

Causes and varieties of inflammatory bronchitis.—1. Simple bronchitis, the result of cold, in the form I have just described. It begins like the varieties we have already studied, only the febrile movement is more accentuated. The fever is continuous, and the phenomena vary according as we are dealing with a bronchitis of the large, the mean, or the capillary bronchi.

To this variety is closely allied bronchitis *a pulveribus*, which results from the inhalation of an atmosphere charged

with dust, and that which follows the inhalation of irritant gases.

2. The most important variety, the one on which we must dwell in particular, is *capillary bronchitis*—that is to say, an inflammation which has reached a greater or less number of the bronchioles, those which approach the pulmonary vesicle and which differ from it only in that the epithelium is distinct and the vascularization is very different, even as Robin has established, as I recalled to you at the beginning of these lectures.

Capillary bronchitis is an inflammatory affection of the bronchial mucous membrane, the habitual course of which is from the large bronchi towards their termination; therefore it has less tendency to become localized than pneumonia for example, which seizes at once upon a lobule of the pulmonary parenchyma.

The progress of capillary bronchitis is closely related to that of broncho-pneumonia, and the frequency with which these two lesions are associated allows us to judge of the relation existing between them. Still, if you read the article which M. Blachez devoted to the study of this question in the *Dictionnaire de médecine pratique*, and that which my teacher, Dr. Roger, whose ability is well known, has written, you will be convinced that the two diseases should be held as distinct, both anatomically and clinically.

Capillary bronchitis is characterized by its inflammatory form, by its seat in the deeper bronchi, and the ease with which it spreads over the entire bronchial tree, by its etiological conditions (for it is usually a secondary affection), by the group of symptoms which accompany it, such as ulcerations of the mucous membrane, atelectasis by the blocking of certain air channels, and finally by the characteristic suffocation which is the chief accompaniment of the high fever.

Whether a special microbe be found in the affected bronchi or not, these lesions may still lay claim to an inflammatory character, and, what is specially characteristic of this affection, aside from its cause, is the fact that it is extensive, general, and is readily complicated by pulmonary congestion, emphysema, and broncho pneumonia. For a detailed description of the symptoms and the lesions I must refer you to our standard treatises.

The physical signs of capillary bronchitis are as generalized as the lesion; mucous and sibilant râles, of every calibre, are heard together, so to speak. Mucous râles unquestionably predominate, but they are mingled with sibilant, and this in proportion to the plasticity of the products of secretion, which may extend so far as to block totally the calibre of the bronchioles. These râles are in great proportion fine and bursting, and where pulmonary atelectasis occurs these sounds are veiled and may disappear altogether. In the neighborhood the respiratory murmur is in turn altered.

The functional troubles, dyspnea, cough, expectoration, exist in proportion to the extent of the affection. Asphyctic phenomena soon appear; in the infant especially the dyspnea is characterized by thoracic retraction. Cyanosis increases rapidly and death soon ensues.

3. *Chronic inflammatory bronchitis.*—The inflammatory form of bronchitis rarely assumes the chronic type, except when it is dependent on some diathesis or on accidental causes repeated or permanent. Emphysema, with which it is almost always complicated, is a sequela, and in turn contributes to recurrence; during the repeated efforts at cough provoked, air enters the alveoli and is imprisoned in the capillary bronchi by the muco-purulent secretion; thus is produced emphysema as well as dilatation of the bronchi.

Finally there is a point which must be insisted upon, and this is the readiness with which in these patients there occur attacks of acute congestion, which, infrequent and transient at the outset, become more and more frequent and prolonged and aggravate the condition of the patient. In the beginning the patient simply coughed and expectorated abundantly enough each morning, and could attend to his business the rest of the day, only stopping when the retro-sternal pressure, the dry and persistent cough and the acute fever marked the onset of a congestive attack. Soon he becomes a permanent invalid in view of the constant presence of these phenomena rather than owing to the acuteness of the fever.

4. *Inflammatory bronchitis in children.*—Although of less frequent occurrence in infancy than the congestive form, the inflammatory is especially met with in extension and in generalization as a capillary bronchitis, and sympathetically with well-marked dyspnea and even asphyxia. It may be dia-

thesic; it seems often to be connected with the appearance of cutaneous affections more or less irritative. Often also it is accidental and connected with catching cold, something to which the infant is peculiarly exposed.

There are two elements which render the prognosis of this affection much more grave in the infant than in the adult. In the first place, in the infant hematosis is normally more active and the causes at the bottom of it are much more quickly dangerous. Further, in infancy, the calibre of the bronchi being much narrower their obstruction takes place more readily from the presence of the products of secretion.

5. *Inflammatory bronchitis in old age.*—Far less frequent in the old than catarrhal bronchitis, the inflammatory form affects at this period of life in particular the chronic type with more or less abundant muco-purulent secretion. Above all are acute attacks of congestion likely to occur, and it readily passes into broncho-pneumonia. Finally it often assumes the type of hypostatic bronchitis.

6. *Inflammatory bronchitis of pulmonary origin.*—Inflammatory bronchitis may follow on catarrhal, and especially congestive bronchitis, but it is often dependent on affections of the pulmonary parenchyma. In pneumonia, even the most localized form, there exists almost always a certain zone of congestion and even of inflammation. Emphysema, which is commonly a result of persistent or repeated bronchitis, constitutes a predisposing cause of the congestive and inflammatory attacks of bronchitis.

In the tubercular, the bronchitis, which, we have already noted, surrounds the granular foci with a zone of congestive and of catarrhal irritation, may also cause the inflammatory form. It then constitutes one of the most important elements in the evolution of the affection; whether seated in the mucous membrane of the bronchi or in the parenchyma, congestion, and more likely still inflammation, cause an accumulation of elements around the morbid focus, the more or less imperfect organization of which tends readily towards granular and cheesy degeneration. And since, of these processes, inflammation is the chief one which produces these neocytes in greatest number, it is also the process which we must fear the most and combat most actively. Further still, the passage of the products of expectoration over the inflamed bronchial mucous

membrane tends to cause the development of ulceration and thus to multiply the sources of intoxication, whether they be purely septic or specifically tubercular. From my position as physician to the so-called incurable aged at Ivry, I have noted this alteration in a number of old bronchitics, and I showed two specimens to the *Société Médicale des Hôpitaux*. There occurs a shedding of the epithelium and a superficial erosion of the mucous membrane, and this is met with in particular at the level of the bifurcation of the large bronchi and the trachea, the point where the expectoration most likely lodges and is checked for some time in subjects weak enough not to be able to eject it at once. Now these ulcerations are likely to form in the tubercular, since at certain periods of their disease they are as debilitated as possible. Whence the importance of fighting in them every form of bronchitis and of assisting the expectoration, in order to forestall the formation of the inflammatory bronchitis, simple or ulcerative.

7. *Inflammatory bronchitis dependent on pyrexia or on diathesis.*—In the fevers, and notably in typhoid fever, bronchitis rarely assumes the purely inflammatory type, although it frequently approaches it. The same does not hold true for measles where bronchitis, at first catarrhal, readily becomes congestive, and often, particularly towards convalescence, more or less inflammatory. This is the form of bronchitis which yields the nummulary expectoration, which is frequently enough met with at the end of measles.

As for the diathesic bronchitis, we have seen that it is especially congestive in the arthritic and catarrhal in the scrofulous, but when it is chronic, in the one or in the other, it commonly assumes the inflammatory type, at least in repeated attacks, if not permanently, and the characteristic symptom is the more or less purulent expectoration.

LECTURE XI.

INFLAMMATORY BRONCHITIS—DIAGNOSIS AND TREATMENT.

Inflammatory bronchitis may be divided into an acute and a chronic form.

When the bronchitis is purely inflammatory, accidental, like the form produced *a frigore*, its activity is marked and all the signs of congestive bronchitis are present, the fever being intense and permanent. The affection may last from a few days to five or six weeks. It ends in cure, or repeated attacks terminate in the chronic form.

Finally, when it becomes deep and capillary it may risk the life of the patient: and even though it do not expose him to this immediate risk, it is always serious by the traces which it leaves behind, such as emphysema and dilatation of the bronchi.

These results contribute to give to new attacks of inflammatory bronchitis the chronic type. But the chronicity depends above all on the nature of the causes of the bronchitis, and also on the diathesic state of the patient in whom it developes. In a word, it is especially the etiological conditions which govern the progress of the disease.

The *diagnosis* of inflammatory bronchitis depends above all on a characteristic sign drawn from the nature of the expectoration.

The purulent expectoration, or strictly the muco-purulent, signalizes the occurrence of inflammatory bronchitis. Add to this the sensation of retro-sternal pressure which exists, and especially the febrile state, which is the signal of a true inflammation, with high temperature, pulse hard and vibrating, and you have the elements usually sufficient for diagnosis.

Congestive bronchitis, true enough, is accompanied by a more marked and more painful retro-sternal sensation. It is accompanied, further, almost always by vibrating and sonorous

râles, and scanty, viscous, transparent expectoration, often *nil;* finally the evolutionary fever is less continuous, the pulse fuller, and the perspiration greater.

Catarrhal bronchitis points to an irritation, local, less acute, less painful; its râles are moist, abundant, its expectoration easy, fluid, more or less clear; finally, its fever, often intermittent, causes less heat, the pulse is full, perspiration often profuse.

The nature of the râles and their generalization will be, with the dyspnea, indices of the transition of the bronchitis to the capillary bronchi, and should put us on our guard against the concomitant risk.

Treatment of inflammatory bronchitis.—The therapeutic indications do not differ much from those on which we have already laid stress in connection with the two forms, the congestive and the catarrhal. The inflammatory irritation is indeed often only a degree more in the pathological scale, and while calling for the same therapeusis as the lesser degrees of irritation, it requires that these indications should be satisfied with more energy in order to obtain a more effective result. Further we must note that it is the indications of acute congestion which prevail in acute inflammatory bronchitis, and those of chronic catarrh which predominate in case of chronic inflammatory bronchitis, and of this you will be readily convinced in the course of the therapeutic *résumé* on which we are about to enter.

In the acute form of inflammatory bronchitis we will use at the outset emollients; emollients applied in particular on the skin and to the respiratory mucous membrane in the shape of fumigations, pulverizations and even simply of emollient drinks. We need not hesitate here to make the patient drink abundantly, because the hyperemic *rôle* is *nil*, and in the congestive period it is absent. Now hot drinks, by furnishing to the bronchi the elements of a secretion which may directly diminish the congestive afflux, and by provoking a revulsive sudorific movement on the part of the skin, these drinks, I repeat, can only act favorably on the disease in its entirety.

After the emollients come the revulsives—the cutaneous and intestinal. In the inflammatory form it is necessary to employ them more rapidly than in the congestive and more intensely as well. Irritating frictions may thus be dismissed

and wet and dry cupping resorted to at once; blisters are especially useful, large, and placed alternately on one and the other side of the thorax, in front and behind, with the precautions I have already noted in order to avoid the accidents which cantharides is likely to evoke.

In case of the intestinal revulsives, the dialytic purgatives, to which I have hitherto called your attention, are not alone to be used, but also the neutral salts and even certain drastics.

I must here add a few words about venesection. This is to-day rarely, too rarely resorted to. Nevertheless it may be of signal service, especially in the inflammatory and the deep forms of bronchitis. Next to wet-cups, leeches may be applied to the base of the thorax, but they do not always act quickly enough. Venesection, on the other hand, is a powerful means, and when not absolutely contra-indicated by the state of the patient, it may be productive of excellent results. Venesection diminishes the beginning venous stasis, lowers the vascular tension, and by thus making in the chest place for the introduction of air, it favors hematosis. I have seen cases where it has been productive of immediate benefit like that which comes to the individual about to be hung when the hangman cuts the rope, and thus brings on asphyxia. If it be true that venesection does not cure it is just to add that it eases much, that it diminishes the risk and gives us time to use other agents; you have seen this year in our service two cases, certainly one where venesection was productive of the above effects.

Finally in these cases it will often be necessary to resort to nauseants and even to emetics, which are so efficacious when it becomes essential to modify profoundly the pulmonary circulation. We should not delay to administer quickly, in quite large dose, the nauseants which combine a decongestive with a powerful alterative action; such are the antimonials, kermes, white oxide, and even tartar emetic. I will not dwell on the best way of administering these drugs, for I have already dwelt on this; I will recall to you only the fact that we are dealing with a disease in which the nutritive activity of the elements is deeply affected, and, therefore, the treatment must be radical in dosage and in persistence.

The second indication is, we have said, the inflammatory secretion, so to speak. We are no longer dealing, as in case

of the catarrhal form, with a simple hyperemia, but with a plastic production or a multiplication of neocytes. Our aim in the presence of such a process is to alter it into a simple hyperemia; for whatever tends to increase the dryness of the mucous membrane increases its congestion and awakens still further the inflammatory tendency. This is the reason why the agents which favor secretion, and of which I have been speaking to you, are those which are indicated in case of inflammatory bronchitis. We must not check at once the secretion of the mucous membrane, but at the outset modify it and then moderate it. At the outset, hence, we should order soothing drinks and emollient or slightly aromatic fumigations; to these should be added the agents already noted under the head of congestive bronchitis. This result once attained we must not be unmindful of the necessity of evacuating the products of secretion; this we accomplish by means of the expectorants, and possibly by emetics.

In case of capillary bronchitis the marked afflux both of the blood and of the products of inflammatory secretion calls urgently for depletants and for evacuants. The wet cup and venesection are here indicated, and these, together with emetics, in repeated dosage, will clear the bronchial channels.

The cyanosis and the rapid asphyxia of those suffering from capillary bronchitis has suggested the use of inhalations of oxygen. But when we remember that it is not air which is lacking, but the room for it in the thorax, it is readily apparent that what is above all necessary is to let the air channels free. You have seen in my service a number of patients to whom, in analogous conditions, I ordered inhalations of oxygen, at the request of some of your number, and the result has been practically *nil*, even as I had predicted it would be.

Often again, you will have to direct your attention to the general febrile state of these patients and to act directly against this by antipyretics. Finally the essential cause of the bronchitis may be the object to which your therapeutic efforts are to be directed.

In chronic inflammatory bronchitis alterative medication is called for, such as I outlined under catarrhal bronchitis; but with this difference, on which I insist, that we must act with greater force and persistence owing to the greater depth of the nutritive disturbance which we are facing and owing to

the obstinacy with which it persists when once it has obtained foothold in the mucous membrane.

Typical Methods of Treatment Applicable to Inflammatory Bronchitis.

Acute inflammatory bronchitis in an adult.—Order abundant emollient drinks, hot. Apply to the thorax fifteen to twenty dry cups, and four wet cups to the base. Paint with iodine between the shoulders, or apply a large blister for six hours, and then poultice. Give a purgative of sulphate of soda (30 grammes) in an infusion of 10 grammes senna; then keep the bowels open by pills containing 3 centigrammes of podophyllin powder and 1 centigramme of extract of belladonna.

Or, better still:

℞	Rhei. pulv . . .	5 centigr
	Aloes pulv . . .	5 "
	Extr. Belladon . . .	1 "
℔	ft. pil. No. 1.	

Order a light diet: No solids, milk, soups.

Acute inflammatory capillary bronchitis in an infant.—Administer as an emetic:

℞	Pulv. Ipecac. . .	50 centigr.
	Syrup Ipecac . .	50 grammes

S. One desertspoonful every five minutes till vomiting is induced.

Rub the back with cotton moistened with seven to eight drops of croton oil.

Apply to the thorax a large poultice, or if need be a blister for four to five hours, to be followed by a poultice.

Administer every hour fractional doses of white oxide of antimony.

In case of constipation give an enema composed of:

℞	Infus. Senæ (5 grammes of seeds)	100 grammes
	Glycerinæ	10 grammes
℔	S To be used as an enema.	

Give milk diet, alternating with weak milk punch or Malaga wine.

Inflammatory capillary bronchitis in a stout woman at the time of the menopause.—Apply to the base of the thorax twenty-five dry cups. Bleed to the extent of 250 grammes and repeat two to three days after if suffocative attacks recur. Apply mustard plasters to the lower limbs. Small doses of ipecac every two hours. If need be, a blister to the sub-clavicular region and five hours after a poultice. Rigid diet: hot stimulating drinks; milk, soup and wine.

Inflammatory capillary bronchitis in an old man.—Emollient drinks; fractional doses of kermes, repeated; rub the back with:

℞ Liniment camph. ammoniat.
Essence terebinth: . . āā 50 grammes

Under the clavicles apply a large blister (20 centimetres by 8 to 10.)

Diet of milk, punch, soup, Burgundy or Malaga wine.

Chronic inflammatory bronchitis.—Small doses of Dover's powder daily; once or twice weekly order:

℞ Carbonate of magnesia . . 4 grammes
Tartaric acid . . . . 2 "

Fumigations of chlorhydrate of ammonia.

Four to five pastilles of kermes daily, or one to two of calomel each morning.

Revulsive frictions to back and to thorax. Mild and tonic diet.

LECTURE XII.

SPASMODIC BRONCHITIS—VARIETIES AND SYMPTOMS.

I do not propose to sketch for you the history of all the manifestations of spasmodic irritation of the bronchi; but I wish in this lecture to draw your attention to the relations which unite or approach these diverse affections, and to the pathogeny at their basis.

Doubtless more than one of your number is asking the meaning of this expression—spasmodic bronchitis. Bronchitis means irritation of the bronchi, and by the word spasmodic is generally understood purely nervous affections. Nevertheless all irritations are not inflammatory; even as there are congestive and catarrhal forms, so are there spasmodic. Spasmodic bronchitis, then, is an affection seated in the bronchi, and the cause is a peculiar irritation which affects the spasmodic type.

Asthma is the most symptomatic expression of this affection—that is to say, an affection which has as an immediate cause a neurotic irritation, and in symptomatology produces only nervous accidents or functional disturbances of the air passages.

A pathological variety is nearly allied to it; this is whooping-cough, as Trousseau has pointed out; this affection, probably parasitic, epidemic and contagious, has still a purely neurotic type, at least in its essentials.

The manifestations of asthma may, besides, have their outcome from any point whatsoever of the air passages. Thus, in going from above downwards, we have an *asthma of the nose*, or hay fever, an asthma which also follows on any alteration of the nasal fossæ, from a polyp to the simplest form of coryza. Next comes *laryngeal asthma*, which tallies with laryngitis stridulosa, and which may accompany a lesion of the thyroid body or of the larynx; and finally *bronchial asthma*, which is the usual type.

We have still further the secondary manifestations of

asthma, resulting from a mediastinal tumor and especially from the bronchic ganglia—such as tuberculosis of these ganglia—and from direct and indirect lesions of the pneumo-gastric.

Finally, to complete this tableaux of the manifestations of asthma, we note *cardiac asthma,* due to affections of the heart and to gastric disturbances, notably to dilatation of the stomach.

We could still further multiply these varieties by following the descriptions given by many writers, notably the great nosologist Sauvages; but I have mentioned the most important. Finally, we may approximate to these asthmatic manifestations that peculiar type of respiration which has been described by Cheyne Stokes, and which is characterized by a period of apnea followed by a period of respiration gradually increasing and then decreasing, and thus for the moment simulating the attacks of asthma.

All the varieties of respiration of these morbid states are comparable if not identical with asthma, and the mechanism at the bottom of them is at least analogous to that which produces a neurosis, properly so-called. Therefore we will study it at the outset in its most common and regular form.

Asthma is essentially a neurosis. Indeed, it is an apyretic paroxysmal affection, as well as regards the attacks which are, so to speak, the first element as well as the crises which constitute these attacks. The attacks of asthma are provoked by a sensation, often peculiar for each asthmatic, followed by a period of calm.

The initial sensation may begin from any one of the sensitive organs. The attacks are rarely consecutive to a cutaneous impression: nevertheless, in certain patients the action of cold on the skin suffices to induce an attack. Usually the attack of asthma results from a sensation on the mucous membrane of the respiratory passages, whether of the nose, the larynx, or the bronchi. Thus, an atmosphere loaded with certain dusts or impregnated with certain odors, may excite an attack of asthma. In certain cases a descent to a dense atmosphere suffices to provoke an epigastric and dyspneic feeling of depression, followed by an attack of asthma.

In all these instances the attacks begin from an irritant sensation acting on the mucous membrane of the respiratory

tract. Even as in whooping-cough an irritant even simple pressure exercised over the larynx may provoke an attack, so in asthma, an irritant acting at any part of the respiratory mucous membrane may excite an attack of asthma.

There are instances where, indirectly, the provoker of the attacks reveals all the better the neurotic nature of the affection: this is when the attack is induced by a moral impression, or indirectly through cardiac or gastric disturbances.

Symptoms of an attack of asthma.—The attack of asthma may be divided into a number of distinct phases: 1. A period of dyspnea; 2. One of dry catarrh, or of congestion; 3. One of moist catarrh; 4. A consecutive period, or of emphysema.

The patient first experiences a sensation of respiratory anguish, soon followed by deep and repeated respirations during which a considerable inspiratory force is exerted. Little by little the attack developes and the dyspnea increases to such a degree that the patient brings into play all the respiratory powers at his command. The diaphragm, the muscles of the neck, those of the thorax, all take part in the efforts, and determine an active, deep inspiration, accompanied by a species of whistling of the air which penetrates painfully into the respiratory passages, and which is followed at once by a passive expiration, prolonged, and accompanied by râles of varying nature. The contrast is marked between this inspiration, so laborious and brusque, and this prolonged expiration relatively imperfect, and causing only an imperfect emptying of the air which the inspiration has caused to accumulate.

During these efforts the dyspnea is extreme and increases for awhile up to orthopnea. The patient stands erect or in a half sitting posture, the arms extended and the hands fixed tightly to the end of his bed, for example, in order to obtain a fixed point of resistance to the muscles which, attached to the shoulders and to the thorax, effect the distension of the lungs. This dyspnea is accompanied by inspiratory and expiratory whistling, heard at a distance, and by râles on auscultation, râles which are vibrating and sonorous at the outset and later are transformed little by little into moist and sub-crepitant of varying calibre.

The cough, amounting to but little at the outset, increases as the catarrhal stage replaces that of dry congestion; at first the cough is accompanied by a scanty viscous expectora-

tion, that of bronchial congestion, and then the expectoration becomes catarrhal, abundant, white, and still remains painful.

The physical signs are not especially marked: On percussion there is universal tympanites, marked in particular under the clavicles. On auscultation we hear a roughened, choked sound on inspiration, which seems to emanate entirely from the larynx, and at the same time sibilant râles, few in number, are heard, shortened like the inspiration itself; in the succeeding period are heard the sub-crepitant râles, which become moister and larger as the attack nears its end.

Thus it is that the attack of asthma progresses and terminates, the catarrhal period being a trifle prolonged and then disappearing, leaving behind only a slight emphysema which each attack tends to aggravate to a degree. In short, the attack generally beginning in the middle of the night, the patient finds himself at dawn usually in the grasp of a complete catarrh; often, indeed, the crisis lasts only one or two hours; usually it occupies most of the night and too often more still.

Pathogeny of asthma.—It is not my intention to give you the history of the theories which have been invoked to explain and to interpret the nature of asthma — humoral theories, congestive theories, nervous theories, from Galen to Beau. These have always held a marked place in the history of asthma; sufficient to-day if we cite the names of Van Helmont, Trousseau, Lefevre, Todd.

It is to-day not at all in dispute as to whether asthma is of nervous origin or not. But although the affection is a nervous one, it is still to be settled whether it is spasmodic or paralytic. Is it a spasm of the respiratory powers alone which produces the crisis the chief characteristics of which I have recalled to you? Is it a deep paralysis of some other element presiding over this function? These two questions remain to be answered, and each has strong points in its favor.

It is self-evident, indeed, that in the asthmatic crisis there is an inspiratory spasm. If you examine carefully the asthmatic, if you read again the description which I have just given you, you will also be convinced that there exists as well an expiratory paralysis. All the inspiratory agents are brought into action at the time of the inspiratory effort, and coincident with expiration, the expirators remain inert, and the thorax remains almost filled with the air which inspiration

has accumulated, so that renewed inspiratory efforts can cause the entrance of only a small quantity of air, and at the end of a certain space of time cyanosis occurs and signs of beginning asphyxia show themselves in the unhappy being whose thorax is filled with air and yet he cannot renew it nor can he expel it, the alternative motion which causes the circulation of air in the thorax being lacking.

Whence, then, why the dual condition of inspiratory spasm and respiratory paralysis play a strong *rôle* in the phenomena of an attack of asthma. But whence comes the double pathological complexus so contradictory in appearance?

Whence, at the outset, comes this curious inspiratory effort during the attack of asthma, marked by the inspiratory whistling and also by the struggle of the peri-thoracic muscles? The larynx offers no proof of being affected. There is no obstacle to the entrance of air, and if the laryngeal noise suggests difficulty in the passage of the column of air through the larynx, this is not due to stenosis of the larynx, for this is not present, but is due to the fact that the call for air is too great for the orifice which it must traverse. Soon a new source of struggle is added to the first: the air when once in the thorax remains there, owing to the inertia of the expiratory muscles; the necessity of respiration causes the patient to endeavor to make fresh air enter into the thorax, and, since the room is occupied by the air which has not been expelled, the patient wastes his strength vainly in the endeavor to force a minimum quantity of air into bronchi which are already filled. The little air thus introduced does not replace what preceded it, but accumulates in addition, and thus increases the fullness of the thorax and causes emphysema of the lung without aiding hematosis to a great degree.

There, you say, is an explanation which takes well into account all the phenomena; but where find the key to this group of symptoms? What, in a word, is the pathogeny? Whence the partial paralysis and the partial spasm, which are opponents, as it were, in the attack of asthma?

You recall, doubtless, that the pulmonary plexus, like the cardiac, is composed of nervous elements of duplex origin; that is to say, there are present filaments from the great sympathetic and filaments from the tenth pair, otherwise called the pneumo-gastric. Now it is established with cer-

tainty experimentally that, in the cardiac plexus, the pneumo-gastric compared with the great sympathetic plays the *rôle* of a moderator, and that in certain instances of great excitation of the tenth pair the heart is so well checked that it stops and ceases contracting. Now, this antagonism, or, if you wish, this alternative action of the two systems of nerves in the central circulation is also met with in case of respiration. The two systems of nerves are met with in the pulmonary plexus even as in the cardiac plexus; and Claude Bernard has proved clearly that there as well is found the paralyzing or checking action of the vagus on the sympathetic filaments. In the presence then of a condition which modifies the equilibrium of this duplex action, and the physiological equilibrium being broken, the attack of asthma may occur.

In the normal state the sensation of the need of respiration, when it reaches the respiratory centres, is transformed by them into a motor impression, is transmitted to the respiratory agents by the different nerves of the muscles, the diaphragm, etc., and the lung distended by these powers inspires the external air. In regard to expiration, the thoracic muscular forces are less efficacious; the lung itself acts through its own muscles. Its fibres play the principal *rôle* in the expiratory act, and empty the alveoli and the bronchi of the air which has entered. In short, the active thoracic agents and those of the lung play their part by assisting one another in the two phases of the respiratory act. That is to say, in inspiration the muscles of the thorax are all-powerful, and the muscles of the lung scarcely act at all; in expiration the muscles of the thorax play scarcely any *rôle*, expiration occurring often passively by the return to rest of the inspirators, but the muscles of the lung are in full activity.

This activity of the essential muscles of the lung is under the dependence of filaments from the great sympathetic. It is these filaments which start these muscles at each expiration, even as they start into action the cardiac muscle at each systole. The pneumo-gastrics also act on the filaments of the great sympathetic going to the lung, even as they do on the heart, by suspending its action, so that the abnormal excitation of the pneumo-gastric will stop the lung in expiration, even as it does the heart in systole; under the influence of this arrest the heart remains in diastole, and the lung stays in a condition of inspiratory dilatation.

After these remarks, we may resume the pathology of asthma in the following words:

1. The starting point is generally in a peripheral sensation, and usually in a sensation arising from the mucous membrane of the respiratory tract, that of the nose, of the larynx or the bronchi. Often, indeed, as we have stated, the sensation seems to start from the digestive tract.

2. Whatever the case, the impression received by the organs is transmitted by the sensitive fibres of the pneumo-gastric to the respiratory centre in the medulla.

3. This centre starts the impression along the motor branches of the same pneumo-gastric nerve.

4. Finally, this impression reaches the sympathetic, checks its action, and the attack of asthma occurs.

The initial sensation, whether felt or not, shows itself by a dyspnea which is the first act of the attack. The suspension of respiration explains the rapid increase and the extreme nature of this dyspnea, as also the absence of all expectoration notwithstanding the attempts made by the sufferer. Under the influence of the stasis which ensues, the mucous membrane, irritated by the air which is altered and charged with carbonic acid, begins to secrete with greater or less abundance, at the same time that this secretion is about to be provoked by the paralysis of the sympathetic.

Numerous elements, we see, act as causes in the pathogeny, but the principal are: pulmonary or peripheral impressionability, the medullar reflex, and the indirect action of the motor filaments of the pneumo-gastric on the fibres of the sympathetic. These nervous elements, by reminding us of the nervous character of the disease, enable us to understand how in the attack of asthma inspiration is so difficult and expiration so limited. All the phenomena of the attack are readily explained under such a pathogeny, as well the respiratory origin of the attack as the cardiac and the gastric origins, in dyspeptics for instance.

I have desired to thus sketch for you this pathogeny, which has never, as far as I am aware, been so exposed, although all the facts on which it rests are known and established. I have dwelt on it because it may throw light for you on numerous affections which are allied more or less closely to spasmodic bronchitis.

LECTURE XIII.

SPASMODIC BRONCHITIS—VARIETIES, DIAGNOSIS, THERAPEUSIS.

We are familiar now with the pure type of spasmodic bronchitis—asthma. We must now pass in review the different varieties of this affection, and of those akin to it, in order to group them even as I have enumerated them.

Let us consider, at the outset, the asthma which we may call *asthma of the nose,* known also as *hay fever,* because some writers, noting its appearance year by year at harvest time, have thought that the dust of ripened plants present at this time in the atmosphere was the provoking agent of the symptoms.

Many kinds of dust would seem to be able to play the same *rôle,* since writers cite the most varied. During my term of service as interne I knew a member of a religious community who suffered from asthma, and in order to provoke an attack it sufficed to approach her with a cachet of ipecac in one's hand. Most curious facts are related by writers, and it would seem that the imaginative faculty of the patients was not always an element foreign to the attacks.

This species of spasmodic and catarrhal affection often assumes the proportions of a very painful disease; and when it affects infants, and this occurs frequently enough, it tires them out to a great degree. It is nevertheless an affection absolutely afebrile and frankly paroxysmal; consequently it has all the characteristics of an irritative neurosis. It lasts about five to six weeks and ends by gradual diminution in the intensity of the attacks.

Thymic or *laryngeal* asthma is more chronic and more persistent; it is also eminently paroxysmal and apyretic. It is connected with the irritation of the larynx by the presence of one or another variety of tumor, and has at times received the name of suffocative goitre. Indeed, the symptomatic

form of these attacks depends certainly more on the manner of innervation of the larynx than on the irritant cause, for the spasmodic phenomena are seen in many forms of laryngitis, particularly in *laryngitis stridulosa* and in croup. In a report presented to the anatomical society on foreign bodies in the larynx I endeavored to prove the paroxysmal nature of the phenomena in all such cases.

Anything which can interfere with, irritate or compress the filaments of the pneumo-gastric nerve give rise to bronchial attacks similar to those of whooping cough, and which are allied to spasmodic bronchitis on account of their chronicity, apyretic nature and paroxysmal progress. Such are all the mediastinal tumors, including aneurism of the aorta. The ganglionic tumors are the most frequent, in particular the hypertrophies and those of tubercular nature.

Whooping-cough is an affection which has absolutely the same characteristics and is marked by spasmodic and catarrhal phenomena. Typical whooping-cough differs unquestionably much from asthma, and yet between the two there are many points of analogy; the attack is composed of a series of spasmodic expirations followed by a whistling inspiration, characteristic of spasm of the larynx. The attack ends also by a catarrhal secretion in which both the bronchial and the digestive mucous membranes appear to concomitantly take part.

All the lesions of the *pneumo-gastric nerves* may also provoke attacks of asthma, and this too no matter at what point the nerve is affected. We may even meet with asthma dependent on a central or bulbar lesion; in which there is lacking the passage of the initial aura or of the sensation which is going to awaken the central reflex; the impression may even arise directly from this centre without any apparent provocation coming from the periphery or the viscera.

Finally, attacks of asthma are met with, alternating with attacks of the *major neuroses.* Van Helmont long ago noted the relations between certain forms of asthma and epilepsy; Trousseau saw the same and has referred to it in his lectures. I myself saw a patient in whom the asthmatic attacks were manifestly alternative with varied attacks, generally epileptiform and probably hystero-epileptic in character.

I have already pointed out to you how severe cardiac dis-

turbances give rise to an impression which goes to the source of the pneumo-gastrics and awakens what might be termed asthmatic manifestations. Whence *cardiac asthma,* often confounded with symptoms peculiar to cardiac disease, because it brings into play the same apparatus, although of different pathogenesis. The point of occurrence of the reflex is in these cases in the heart, instead of in the bronchial mucous membrane; but aside from this peculiarity in origin, the reflex still reaches the medulla, is passed along the motor fibres of the pneumo-gastric, and thus the sympathetic is inhibited.

It will doubtless be asked why the inhibition is produced on the pulmonary instead of on the cardiac sympathetic? This depends on conditions beyond our ken, like the majority of those which determine, in general, the localization of the disease. I know a patient, a sufferer from a mild form of chronic aortitis, in whom there occurs at times cardiac angina and then spasmodic dyspnea, and this should here be called *aortic asthma.*

Let me remark just here that this word *cardiac angina,* I would like to see substituted for the expression *thoracic angina* (*angina pectoris*), which is as bad a word as it is possible to select, and would belong rather preferably to the attacks of grave pulmonary asthma than to the cardiac symptoms to which it is applied.

Still another word in regard to gastric asthma. This is the kind which troubles dyspeptics. Here it is the stomach from which the reflex starts. Since the dyspeptic keeps his bolus for a long time in his stomach and makes chyme but imperfectly, there results a true fermentation; there ensues in consequence a bad effect on the nerves of the gastric mucous membrane. This impression is transmitted to the medulla, and reflected even as happens in the instances of which we have already spoken. Attacks of asthma due to indigestion have been described in the infant (Seé).

These are curious examples of what I purposely term *errors of the pneumogastric.* That is to say, that between the three chief branches of this nerve—the cardiac branch, the pulmonary branch, the gastric branch—there occurs frequently enough an error in transmission which seems to attribute to one of these viscera what belongs to another.

Some among you may remember having seen in my serv-

ice a woman who, affected with emphysema and cardiac disease, complained often in the morning of having had an attack of smothering during the night, and this was not in order to frighten us. On questioning the patient in regard to this symptom the following answer was obtained: she was hungry, she said, and she could only quiet the sensation of smothering by eating a piece of bread, which she carefully kept each evening for that purpose.

What was the truth with this patient? The impression arising from the cardio-pulmonary filaments of the pneumogastric were transmitted by them to the centre, and this centre perceived the sensation as if it had come by the gastric filaments. Now the inverse error is more frequently seen; this is when an impression arising in the stomach is attributed to a disturbance of the heart or of the lungs. Whatever the case these exchanges of impression and of reaction are frequent among the component branches of the tenth pair, and this suffices to explain to us why in many asthma is associated with gastric disturbance.

Further, these localizations may be explained on the theory of special local susceptibility, innate or acquired; *pars minoris resistentiæ*. In case of the nervous system, in which disturbance of function is so frequent, nothing is more simple. The road once travelled by the nervous influence, it tends to follow it again, and thus is the neurosis established.

I have as yet said nothing to you in regard to another form of asthma, to which the name of *renal asthma* has been erroneously applied; you know how likely albuminuric patients are to attacks of more or less intense dyspnea; but the pathogenesis of these attacks scarcely allows us to confound them with spasmodic bronchitis or still less with asthma. Renal dyspnea is produced in those forms of albuminuria which are thought to be dependent on an alteration of the blood, and which, for want of a better name, have been called uremic. We are dealing with a true intoxication; whether this acts directly on the pulmonary mucous membrane through the elimination of urea by the bronchi under the form of carbonate of ammonia; or whether it acts through the alteration in the blood which makes it useless for hematosis; or whether, finally, it acts by excitation of the medulla which is irrigated

by the diseased blood, it is always the alteration of the blood which dominates the pathological scene.

Finally, all writers are about in accord in recognizing a diathesic origin in case of a great many instances of asthma and of spasmodic bronchitis, although they differ both in regard to the nature of the diatheses and in regard to the mechanism more or less immediate by which they determine these bronchial troubles.

The most marked among these pathogenetic influences is without doubt the gouty diathesis; but there is another pathogenetic relation, diathesic or not, which these bronchial affections often assume; it is a relation with chronic or subacute cutaneous affections which has resulted in these diseases obtaining the name of herpetic bronchitis. Whatever the interpretation given to these facts—whether we see a sympathetic exanthema or a substitutive metastasis, the fact remains true and do not forget it.

Diagnosis of spasmodic bronchitis.—Three capital factors enable us to make with certainty the diagnosis of spasmodic bronchitis; it is apyretic, it is essentially paroxysmal in its progress, it is provoked by certain conditions out of proportion to the acuteness and the persistence of the symptoms.

Congestive and catarrhal bronchitis may certainly be apyretic, but then they are light and not at all acute; they may also present remissions and acute recurrences, at times even a true remittence, but the attacks are febrile and are not at the same time dyspneic and paroxysmal. Finally the progress of these affections will always help in differentiation. The phenomena of the attacks give to the neuroses a physiognomy which can scarcely be mistaken.

Congestive bronchitis can, of course, be accompanied, especially when at its acme, by great dyspnea with suffocation; but such an occurrence is transient and it does not recur as in case of the spasmodic affection. Finally, congestive bronchitis is a dry bronchitis as long as the congestion is stationary.

In catarrhal bronchitis, on the contrary, the expectoration is profuse from the start, and it does not pass through the successive stages that characterize asthma. Finally, catarrhal bronchitis, even though remittent, is not in its recurrences marked by spasm; it is further febrile and of limited duration.

We might more easily confound an attack of capillary bronchitis or of suffocative catarrh with an attack of asthma; but the general condition, apyretic in the second instance, and especially the progress of the disease, will not allow us to remain for long in doubt.

A more obscure problem is to find out whether the neurosis is simple; or if not uncomplicated by some organic affection, with what lesion it is combined and what *rôle* these two elements separately play. This problem is especially applicable to pulmonary emphysema. It is above all important to find out in what degree this exists in the dyspneic generally, and in the asthmatic in particular; for it is always met with to a degree, and it appears that if asthma may determine emphysema so too does emphysema often contribute to the development of asthma.

You are familiar with the physical signs of emphysema, the projection of the thoracic walls, the special sonorousness evoked on percussion, and the respiratory noises which are heard, the *piny bruits*, as I term them, since they recall the noise made by the wind as it blows through a growth of pine trees, bruits which vary even unto the diminution or the entire suppression of the vesicular murmur. I need not dwell on this matter further.

Treatment of Spasmodic Bronchitis.—Here, as elsewhere, it is necessary to base the therapeutic indications on the nature, the form, the seat of the affection in the bronchi, which are the immediate seat, the nervous system being the mediate; we are dealing with a neurosis, and usually with a diathesic neurosis. What I have said of asthma is about applicable to all the varieties of spasmodic bronchitis.

The seat is in the bronchi and more particularly in the broncho-pulmonary nervous system. Usually, indeed, the attacks of spasmodic bronchitis begin by an irritation acting on the respiratory mucous membrane; there ensues a modification of the circulation and especially of the bronchial secretion, and in the end the nutrition of these channels is more or less deeply altered and there results emphysema. We must, however, remember that the exciting cause of the spasmodic attack may start elsewhere than in the bronchi, the skin, the nose, the larynx, etc., for example, so as to attack it at its source.

The most efficient indication is, as you know, derived from the form of the affection. Here the form is spasmodic. It is evident, therefore, that the first therapeutic indication is the anti-spasmodic.

In these instances we give at the outset the moderating or calming anti-spasmodics, such as chloroform, which may be ordered by inhalation, chloral, the cyanides, and the various bromides. Often it is advantageous to use the stimulating anti-spasmodics, such as ether, musk, camphor, castoreum, assafetida, and the aromatics like valerian. These agents are to be given according to the strength, the tolerance of the patient, and the chronicity and tenacity of the affection.

These various agents are applicable in general to the attack, not in the midst of it, of course, when the physician cannot do much more than use those palliatives which are rather moral than physiological in their effect. During the attack, that is to say, when the spasms recur frequently, these are of value; between the attacks the anti-spasmodics tend to modify the symptoms and to lengthen the intervals between their appearance. As for the choice between the calming and the stimulating anti-spasmodics, we must above all consult the general condition of the patient; often also it will be necessary to change from one to another, the nervous system being the most changeable of all the systems of the body and passing readily from irritation to excitation through debility, if I may so express myself.

The calming medication has often been used to advantage during the attacks. Opium has been given, in particular as laudanum, even in large dosage (Romberg), or hypodermatically as morphine, as M. Huchard has advised, with the addition of a little ether. The agents used in particular are stramonium, belladonna, atropia, lobelia, phellandra, nicotine, not to speak of tobacco, and conium. These various agents have been administered during the attacks. The most easy to use and the most rapidly efficacious is by fumigation. Cigarettes, containing stramonium, belladonna, alone or combined, with or without nitre, may be ordered.

The substitutive medication, strictly so-called, has more effect on the disease; it may often, even, be used to advantage during the attack.

I have seen Cruveilhier use the method advocated by

Ducrot, and which consists in the application of dilute ammonia to the pharynx. There results, in consequence, a violent revulsion which generally relieves the patient, but at the cost of an extreme difficulty in breathing, for which it is well to be prepared.

The internal use of ammoniacal salts, the carbonate and the acetate, give some relief. Seé has strongly urged inhalations of pyridine. Certain asthmatics drink ice water, others coffee. Emetics may be given, and ipecac, in small repeated dose, has been quite effective in the hands of Trousseau. I say nothing about quebracho and euphorbia pilulifera, drugs more hypothetical than certain in their effects, but they may be tested.

I will not refer to venesection, which could only be of use when a congestive element was superadded to the spasmodic phenomena, whether the congestion affects the lung or other viscera. Hot foot baths, or, better still, perhaps, hand baths, are palliative agents not to be despised. Finally, if at hand, compressed air might be of great utility.

The alterative indication comes next, and such agents are useful, especially between the attacks, in order to modify the nutrition of the elements which constitute the reflex chain of spasmodic bronchitis, in order to change their manner of being and of action.

In the first place we have the iodide of potass in large dose. Used formerly by Aubreé, and highly praised by Jaccoud and Seé, the iodide of potass does not act alone as a modifier of the general nutrition; owing to its eliminative action it is voided by the mucous membrane of the upper air passages and there determines a secretory modification slightly catarrhal, which alters the bronchial mucous membrane, and renders it less susceptible to external agents, and also less likely to remain in that state of relative dryness which is characteristic of the first stage of asthmatic attacks.

The antimonials act in about the same way, either as the white oxide, as kermes, and especially as the arseniate of antimony. The arseniates, indeed, belong by rights after the iodide of potass. I have already spoken of the utility of arsenical fumigations; arsenic internally (Hardy, Delpech), Fowler's solution (Niemeyer), the arseniate of soda (Trousseau), are powerful alteratives, and efficacious in case of spasmodic bronchitis.

Finally, all the expectorants are useful adjuvants in these affections—useful, in the first place, because by promoting the secretion of the mucous membrane they modify its sensibility and render it less impressionable; useful, in the second place, because by ridding it of the products of secretion they prevent its becoming dry. The preparations of antimony and of ipecac, already noted, are also of value under this head: squills, gum ammoniac, the use of which I have referred to in previous lectures, also find their indications here. The same holds true of sulphur, which has been advised in small doses (Debreyne), as also the balsams in general, under which I must not forget to rank terpine.

Further still, many of these alterative agents answer our third indication, and the majority have been administered as well as diathesic agents as local alterants; it is from this same standpoint that we must consider the thermal cure of these patients.

I only desire to refer briefly to a few other medicaments which have been more especially used in certain forms of spasmodic bronchitis; thus in whooping-cough, cochenille, the bromhydrate of cicutine. I cannot, for my part, too highly recommend to you this latter drug, from which I have obtained excellent results, as well in hay fever as in whooping-cough, not indeed to the extent of checking the disease, but in that I have always been able to make the interval between the attacks longer and attenuate them to the degree of making the affection very moderate in its symptoms and in its general aspect.

I have not endeavored, gentlemen, to write for you the history of asthma, as you are doubtless aware, but only to give you an exact idea of spasmodic bronchitis in its varied forms, among which asthma certainly holds the first place.

Typical Forms of Treatment Applicable to Spasmodic Bronchitis.

1. *Spasmodic bronchitis in a nervous young man.*—Chloroform liniment over the thorax; order every three to four hours a pill containing 5 centigrammes of extract of datura; order every night, and during the night in case of an attack, small doses of laudanum in cherry-laurel water.

2. *Attacks of asthma; means of utility during and just before the attack.—a.* Before the attack order a hot mustard foot bath; burn nitre paper in the room and order a cigarette made after Trousseau's formula: paper dipped in a 10 per cent. solution of arseniate of soda and wrapped around a mixture of datura and of tobacco. Give an injection of chlorhydrate of morphine (.01 to .02 with or without admixture with ether).

Inhalations of chloroform may be tried. If the patient can take it administer about 5 grammes of wine of ipecac (Grave's method).

b. When the attack has begun, order a hot hand bath; let the patient inhale ammonia or pure aromatic essence or a mixture of this and of chloroform. Give a little laudanum every ten minutes, or administer an injection of morphine protected by atropine; assist expectoration by small doses of squills and polygala.

3. *Means useful between the attacks of asthma.*—Order before meals twenty grains of iodide of potass, well diluted. Morning and evening order with a pastille of kermes one of the following pills:

℞ Extr. stramon.
Zinci valerianat āā 10 centigr.
℔ et ft. pil. No 1.

Every other day let the patient take a laxative composed of 100 grammes of infusion of senna (10 grammes of the seeds) and 20 grammes of cream of tartar, and on the intermediate day a hot mustard foot bath. The diet should be light and stimulating.

4. *Chronic asthma and emphysema.*—For fifteen days each month, in the morning before breakfast, order about 30 grains of iodide of potass; once a week let the patient purge himself with 20 centigrammes of calomel. Every night, at bedtime, order 2 to 4 grammes of arseniate of soda for one week, and the following week 2 to 4 pills of bromide of camphor (each 20 centigrammes). In case of dyspnea order fumigations of nitre paper in the bed-room, or, better still, Trousseau's cigarettes (nitred paper filled with datura and tobacco, or datura, belladonna, and tobacco). During the two weeks when the iodide of potass is not taken, order 2 to 4 pills of terpine (each 20 centigrammes). Let the diet be light; sup-

press all stimulant; order milk and white meats. Each month let the patient receive about ten séances of compressed air for 1½ hours with ½ an hour of permanent compression. During the summer let him live at Mont Doré.

5. *Hay fever.*—Morning and evening let the patient take three to five granules of bromhydrate of cicutine (each 1 milligramme). Before bed-time let the bed-room be sprayed with:

℞ Tr. eucalyptus . . . . 25 grammes
Acid: Phenic: pur: . . . 50 centigrammes
Ft. sol.

At bed-time let him take:

℞ Infus: aurant: flor . . . 80 grammes
Syr. menth: pip: . . . . 20 "
Chloral hydrat. . . . . 1 gramme
Sodii bromid . . . . . 2 grammes
℔ S. At a dose.

In case the symptoms persist give the iodide of potass.

6. *Laryngeal asthma; spasmodic laryngitis.*—Twice daily let the patient inhale the following decoction:

℞ Aquæ . . . . . 500 grammes
Belladon. flor
Datura flor . . . . . āā 5 grammes
℔ .

Let him gargle two to three times daily a strong infusion of leaves of coca and swallow a mouthful every now and then. Morning and evening let him rub his neck in front with chloroform liniment, and later on, if need be, let him substitute the following:

℞ Liniment: ammoniac. . . . 50 grammes
Ess. eucalypt. . . . . 10 "
℔ S. External use.

Let the diet be light, with no stimulants.

7. *Cardiac asthma; organic disease of the heart; hypertrophy; rheumatic diathesis.*—Each morning between the attacks, iodide of sodium, 20 grains. Each night, before dinner, two teaspoonfuls of:

℞ Infusion *de houblon* . . . 250 grammes
Syr. aconit . . . . . 50 "
Brom. sod . . . . . 25 "
℔

At bed-time let the patient take 15 to 20 drops of tincture of digitalis with the same amount of tincture of lobelia. Two to three times daily order 4 to 5 grammes of pyridine by inhalation.

8. *Gastric asthma; gouty dyspepsia.*—Before two of the meals:

℞	Carbonat. magnesiæ . . .	25 centigr.
	Pulv. foll. belladon	25 milligr.
℔	S. At a dose.	

At the end of each meal order a cupful of infusion of coca with syrup of orange skin.

Each morning, on an empty stomach, order:

℞	Syr. menth. pip	50 grammes
	Sod. arseniat.	10 centigr.
	Tr. lobeliæ	5 grammes
	Aquæ pur.	150 grammes
℔	S. A desertspoonful.	

At night, in case of threatening dyspnea:

℞	Extr. stramon.	5 centigr.
	Extr. opii	25 milligr.
	Zinci ox.	5 centigr.
℔	ft. pil. No. 1.	

Morning and night have the neck and chest rubbed vigorously, also over the stomach and liver.

The diet must above all be watched with care in order to banish all food likely to interfere with a weak digestion, and especially those which by fermenting would cause tympanites. At the end of the meal a little stimulant might be allowed. No tea, scarcely any coffee, no liquor, no poultry is to be tolerated.

If need be order malted beer.

8. *Whooping-cough in a child of seven.*—Three times daily give two granules of bromhydrate of cicutine (each 1 milligramme). Increase the dose by one granule daily till 9 milligrammes are being taken. Continue this dose for three to four days, and then suspend for one day, and renew.

Each night vaporize the room with weak phenic acid solution or benzinated water. In case the vomiting persists

notwithstanding these means, give before each meal in a little sugar and water:

℞ Aq. menth. pip. }
Aq. chloroformi } āā
℥ S. One teaspoonful

LECTURE XIV.

THE SO-CALLED INFECTIOUS BRONCHITIS. ETIOLOGY, SYMPTOMATOLOGY, TREATMENT.

I HAD intended concluding these lectures with the last, thinking that I had about completed the circle of the alterations which an irritant may determine on the mucous membrane of the bronchi, when some of you expressed the wish that I should add another lecture on the so-called septic varieties of bronchitis, or the infectious varieties.

In reality, to conclude with infectious bronchitis is the proper way to end the interesting study of the pathology of bronchitis, although unquestionably in doing so we depart a trifle from the primary object we had in view; still there is really nothing contradictory in our action. While recognizing the nosological basis on which rests this variety of bronchitis, it will be easy to show you in the course of the brief remarks I propose making the importance of the physiological element in the special manifestations under which this affection may appear.

From an anatomical standpoint, compared with the common forms which we have studied—that is to say, the congestive, the catarrhal, the inflammatory and the spasmodic—we need only consider three special types of septic or infectious bronchitis: the ulcerating, the gangrenous, the diphtheritic.

I have already spoken of those bronchial ulcerations which occur in case of certain varieties of chronic bronchitis, as the result of the purely mechanical stagnation of the more or less altered products of secretion on the mucous membrane at the level of its sulci. There are still other bronchial ulcerations: that, in the first place, which results from the presence of tubercles in the thickness of the mucous membrane; and that, in the second place, which is met with in tubercular subjects, not so much on account of the development of a local tubercle,

as on account of the nutritive destructive processes to which all cachectics are liable.

In studying the history of the varieties of laryngitis you will meet with these various occurrences and causes of ulceration.

As for gangrene of the bronchi it may appear in different ways which it is essential to differentiate. It may follow in the same causes as those to which we have just referred under the ulcerative type; that is to say, it may result from the arrest of local nutrition and be purely co-incidental, or else it may be caused by a disturbance of nutrition more general and to a change in the blood. It may complicate an organic cardiac or pulmonary disease.

There is a variety of gangrenous bronchitis which especially deserves this name, and which has been described under the name of curable gangrene of the lung, and which in reality is only a superficial gangrene of the mucous membrane perfectly susceptible of cure. The same considerations apply to its etiology and pathogeny.

Finally, we must consider diphtheritic bronchitis, which is associated with the disease of the same name and may also appear under two distinct forms: the one the result of simple extension of the diphtheritic layer from the pharyngo-laryngeal mucous membrane to that of the bronchi; the other, which developes in the bronchi at the outset, without propagation from the neighborhood, following on a general intoxication. The first form, be it well understood, is far less grave than the second: for although it exposes the patient to asphyxiation, even to consecutive intoxication, there is an opportunity for the membrane to become shed before these accidents can occur; while the second form carries with it a general and deep intoxication, and thus increases greatly the necessary risks of the disease.

It might seem appropriate to add to these varieties, without question the most important and characteristic, those which accompany great pyrexia and deep poisoning; but we may say here, once for all, that the different causes of these morbid localizations are likely to produce above all catarrhal bronchitis and the passive congestive form, which we have already studied; or else they approximate to the special forms we have just spoken of, according as they become ulcerative,

gangrenous, or pseudo-membranous. Such are the bronchitis of typhoid fever, of the virulent and infectious fevers—pyemia, for instance, and that which accompanies uremia.

Causes.—The causes of infectious bronchitis may be resumed in a few words, as follows: At the outset cases where the alteration in the nutrition of the bronchi depends on the intensity with which the irritant action affects the mucous membrane; those, again, which depend on the weakness and depressed condition of the general nutrition of the patient; finally, the instances where the alteration depends especially on the toxicity of the morbid cause. I will only add to refresh your memory the nutritive alterations dependent on mechanical compression by tumors of the thorax pressing on the bronchi, on lesions produced from without inwards by the introduction into the air passages of irritant foreign bodies. I have a number of times seen old pleurisies accompanied by gangrenous bronchitis.

Let me relate to you here a case in which I was much interested: A man in full strength and health, but subject to rheumatic attacks, caught cold as the result of a night passed half in an insufficiently heated railway station and half in an open carriage. The resulting pleurisy was complicated by phenomena of gangrenous bronchitis, and of such a degree that not only did the expectoration have a fetid and a gangrenous odor, but the breath exhaled such an insupportable odor that his room and everything in it were infected. The gangrene was not difficult to diagnosticate, and since the signs of pleurisy had not all disappeared, I predicted the possibility of a pulmonary perforation, and this soon happened. The insufficient nutritive state in which this rheumatic was determined this dangerous morbid condition, and he had not sufficient strength left to overcome it.

Symptoms of infectious bronchitis.—Let me resume, in a few words, as I did for the etiology, the symptoms of infectious bronchitis.

The symptoms are, we may say, always secondary, and they arise amidst a different symptomatology according to the primitive disease to which they belong. In any event it is almost always in patients more or less weakened by bad hygiene or by prior disease that we see these varieties of bronchitis develop. All the constitutional diseases are predispos-

ing, but it is above all the soil which is of importance, and the least infectious disease may at any time change into the infectious form in case the patient is in a state of weakened or insufficient nutrition.

The bronchial complication is heralded, generally, by fever, or at least by exacerbation of the fever from which the patient is already suffering, and by an aggravation of the cachectic state, in which he already is.

It is especially the functional disturbances which, in such cases, draw attention to the bronchi. Dyspnea is not always present, and in the state of depression in which the patients are the most marked symptoms are masked and the majority of the subjective signs are wanting. Still, when the bronchi are so obstructed that asphyxia is likely to set in, we see occasionally transient moments of functional wakefulness when there occur attacks of dyspnea even to an intense degree, so much so that asphyxia and poisoning joining their forces, the patient remains in a state of indifference and of ominous anesthesia.

The cough is a constant accompaniment, and in general it pursues the same course as the dyspnea, being acute enough at the outset, at least at intervals, and only ceasing at the end of the process.

The expectoration is here, without question, the most certain element in the clinical picture, and on it in general the diagnosis is based. Usually, and at the outset, it is mucopurulent, more or less catarrhal and inflammatory, according to the primitive variety of the affection which is complicated. When ulceration of the bronchi sets in, the expectoration soon becomes discolored, at intervals, by a slight sanguineous tint, even though the ulcerations are not very deep. Whatever the extent of the process, however, under the microscope are discovered in the expectorated matter, besides the elements which belong to the primitive affection, blood corpuscles and their coloring matter, and also the epithelial cells which are exfoliated from the surface of the mucous membrane.

Almost always, also, when the ulcerative process is extensive, the expectoration has a stale odor which denotes beginning fermentation of the products.

In case of gangrenous bronchitis the expectoration also furnishes the diagnostic sign. The same conditions I have in-

dicated are united, and furthermore the expectoration and the breath of the patient, especially the former, exhale a fetid odor which suggests a macerated anatomical specimen, and which is never forgotten when once it has been smelled; this odor, therefore, is a specific sign of gangrene. The microscope, better still than in the ulcerative form, will show in the sputa the elements of the gangrenous eliminated tissue, with the blood corpuscles which follow on the ulceration consecutive to this elimination.

At times the physical signs will enable us to specify the parts which are particularly involved in the gangrenous process, and this by the aggregation of the moist râles in distinct foci, which allows us not to confound them with the diffuse signs of ordinary bronchitis. Often, indeed, the focus once formed will give rise to a souffle, a souffle of induration resulting from the plastic zone of irritation which forms around it, and further still the cavity souffle, when a void is left by the expulsion of the gangrenous products. These signs, however, are rarely met with because gangrenous bronchitis, at least in its most usual form, has not much tendency to extend into the thickness of the parenchyma of the lung, and rarely leaves other than superficial imprints, so to speak.

As for pseudo-membranous bronchitis, it is, at the outset, marked by considerable dyspnea, and apparently, out of all proportion to the lesion. At the same time occur attacks of suffocative cough, painful, and with a certain inspiratory whistling which is evidently produced at the beginning of the respiratory tract. In fact, auscultation reveals that there exists from the side of the lungs only a marked weakening of the respiratory murmur. It is only when the false membranes tend to become detached and when the bronchi begin to secrete a more or less catarrhal flow, that we hear mucous moist râles generalized and often a crackling noise, as though valvular, due to the lifting up of these diverse products by the passage of the air, a noise which has been compared to the shifting of a curtain by the wind.

The expectoration, in these cases, may contain false membranes, sometimes even true pseudo-membranous casts of the calibre of the bronchi. It is very important to differentiate these products of concreted mucous secretion from fibrinous exudates and the cylinders which result from an intra-bron-

chial hemorrhage, and also from the secretions of aphthæ which are sometimes met with in the bronchi. The microscope will enable us easily to differentiate.

As for the typhoid and the pyemic varieties of bronchitis, these are truly secondary phenomena in relation with the pathological state in the midst of which they occur. In fact no special sign reveals their origin; they are varieties of congestive and of passive catarrhal bronchitis, as I have already stated, which are marked by the characteristics which we have noted, and are distinguished in particular by the general state of the patient in whom they develop, or by the morbid condition in the midst of which they are evolved.

But here again I am unable to give you a complete history of these diseases, and I only desire to indicate to you clearly the practical deductions to be drawn from this review—in a word, the therapeutic indications of infectious bronchitis.

Therapeusis of infectious bronchitis.—I have endeavored to point out to you in the course of the brief *résumé* which I have made, the important place which, in these varied expressions of septicity, the state of general nutrition and the strength of the patient occupies. Nutrition is reduced to a minimum, so that total death or at least rapid degeneration of the anatomical elements occur, and the strength is reduced to such an extreme degree that the patient cannot conceal the loss.

The first indication to be filled, then, is to lift the nutrition up to a higher level and to provoke the return of a more effective and regular activity in the system. At the outset, then, tonics are to be used; and we may state that here tonic medication may be used in all its forms.

The chief agents should be oxygen and the chlorates, which act especially on hemapoiesis; coca, quinine and phosphates, which add resisting power to the elements, and finally alimentary agents capable of easy and rapid digestion, such as milk, liquid foods, bouillon, wine.

To these tonics must be added those which are capable of stimulating the nutritive functional activity. Such are: wine, and in general all the alcholics in fair dose. Coffee, tea, are to be given, and all the anti-spasmodics we have spoken of: ether, valerian, musk, camphor and the aromatic umbelliferæ.

At times preparations of phosphorus are added, with which it is well to be careful, and to recall the fact that if the excitant

dose of phosphorus be passed, the excitability of the elements is rapidly used up, and they become fatty, granular, degenerated.

This tonic-stimulant therapeusis is called for by the condition of the patients: but the local condition of the bronchi calls for a different medication: the nutrition of the mucous membrane must be modified, the nature of its secretion must be altered, and the more or less gangrenous process at work must be checked both as regards the products of this secretion and also as regards the elements of the altered mucous membrane.

This indication is satisfied by the use of substitutives and of antiseptics. All the former class which we enumerated particularly under the head of catarrhal bronchitis (chronic) may be used to advantage here. The balsams in particular, the resinoid preparations (turpentine, eucalyptus, copaiba, cubebs) as also creasote, find here their indication. The sulphurs may also be utilized, at least in chronic, prolonged varieties.

As for antiseptics, the object of their use is evident; it is only necessary to select those which can easily be applied to the respiratory tract. Thymol answers this purpose, and with it, as also better than it, iodoform. Creasote and phenic acid preparations are also of use. All these agents are more valuable if used locally by fumigation or the spray.

Of all these agents those best suited to ulcerating bronchitis are, aside from expectorants and the majority of the drugs resorted to in case of chronic bronchitis, tonics, stimulants, the substitutives; the antiseptics are only of secondary utility here.

In gangrenous bronchitis, on the contrary, the antiseptics hold the first place in the local treatment, as also the balsams, which are not only antiseptic, but which also favor hematosis owing to their oxidizing action. As for the general treatment the simple tonics and stimulants rank above all.

In case of pseudo-membranous bronchitis, a general tonic treatment should be the first indication, the danger lying in the asthenia, which results from the diphtheritic poisoning. Next in order come the substitutives, those in particular which we know are capable of producing on the mucous membrane a catarrhal irritation with moist and abundant secretion, for we have seen that it is often by transformation into this species of irritation that the pseudo-membranous irritation is cured.

Among these therapeutic agents belong all the balsams and the essences in particular; tolu, cubebs, eucalyptol. Under this head have also been given mercurials, in especial repeated doses of calomel, also the chlorate of potass, iodoform, the iodides and the bromides, alcohols, and to complete the effect of these various agents expectorants are administered to cause the expulsion of the products detached from the mucous membrane. Finally, to these agents may be added the sulphurs.

As for the congestive and the passive catarrhal bronchitis of the essential fevers, when they call for medication, the revulsive type may be of utility, as also the means which I have mentioned under the subject of catarrhal and congestive bronchitis; but owing to the passive nature of these complications the dominant therapeutic indication must be a stimulant one, generally stimulant and stimulant in particular of the bronchi. The essences and all the balsamics and alcohols fulfill this indication. The ammoniacals may also be added to a certain degree.

Finally, owing to the general state of the patients, the most stimulating tonics should be ordered.

Typical Forms of Treatment Applicable to Infectious and Septic Bronchitis.

1. *Ulcerative bronchitis following on chronic bronchitis.*—Three times daily order one of the following pills:

℞ Pulv. scillæ. . . . . 2 centigr.
Gum ammoniac . . . . . 5 "
Ess. eucalypti . . . . . gtt. j.
℔ ft. pil. No. 1.

In case these do not answer, order:

℞ Creasote . . . . . gtt. iij.
Ess. citroni . . . . . gtt. ij.
Aq. puræ . . . . . 120 grammes
Syr. aurant. flor . . . . 30 "
℔ S. A teaspoonful every two to three hours.

If the patient prefers he may take one to four to five capsules of cod liver oil creasoted.

Sulphurous inhalations may be ordered to advantage.

Before each meal a glass of quinine wine should be taken pure or with the addition of a third or a quarter of glycerin.

The diet should be tonic. Alcohol should be ordered at the end of each meal or a cup of some aromatic infusion.

2. *Gangrenous bronchitis* (*curable gangrene of the lung*). —Three times a day order:

℞	Infus. quininæ	100 grammes
	Syr. aurant. cort	50 "
	Ess. eucalypti	gtt. 5.
	Tr. antiseptic (?)	20 grammes
℔	S. A desertspoonful.	

Let the patient inhale powdered iodoform each night, and have the bed-room sprayed with thymol.

Before each meal order some quinine wine.

Same diet as in preceding case should be given.

3. *Pseudo-membranous bronchitis, in a case of diphtheria with tendency to generalization.*—Every other day the patient should take in the morning fasting, unless he has diarrhœa, the following powder:

℞	Calomel	10 centigr
	Pulv. jalap	2 "
℔	S. At a dose.	

Every hour give a mixture containing chlorate of potass and acetate of ammonia in usual dose.

Three times daily order a eucalyptol perle.

Have the bedroom frequently sprayed with carbolic solution.

Give stimulating drinks, coffee, rum, chartreuse; order a little pepsin, the elixir for instance, and a little quinine, daily. Give extract of beef and peptones by enema, if necessary.

4. *Septic bronchitis with pyemia.*—Order quinine; apply twenty dry cups to the base of the thorax, and renew each day or every other day; give three times daily:

℞	Infus. arnicæ	100 grammes
	Syr. limonis	50 "
	Glycerin	25 "
	Acid: phenic.	1 gramme
	Aq. menth. pip.	20 "
℔	S. A desertspoonful.	

Purge every two to three days with .10 grammes powdered calomel, taken in the morning fasting.

Order each night in very hot punch twenty drops tincture aconite and ten drops laudanum of Rousseau.

Order repeated fumigations with infusion of eucalyptus, pure or with the addition of a few drops of eucalyptol.

Allow coffee, wine, milk, meat, eggs, even as in the preceding cases.

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